

TERRY KEPNER'S

portable 100

\$3.95/CAN \$4.95

How Long 'Til Christmas, Daddy?

Now you can tell them, exactly

Easy Expense Reporting

Let your conscience be your guide!

Calling TEXT from BASIC

At last, it's a round trip.

Battery Watch!

A software fuel gauge for your 1400LT.

Souped Up and Civilized.

Some Ideas to make the most of your Tandy 200.

PUZZLE.BA

A Tandy 200 mindbender

(Tandy 102 version online).

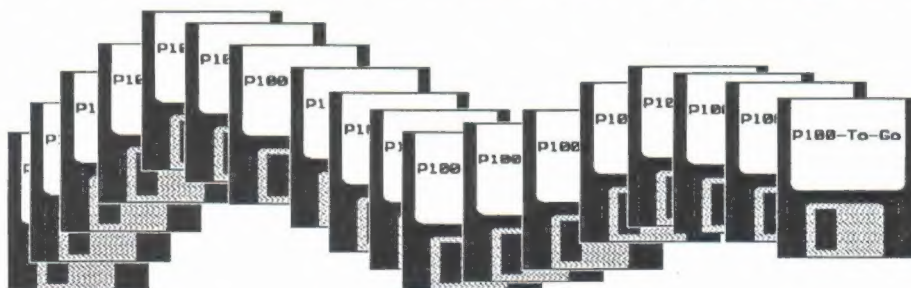


74724

FINGERS TIRED?

Accomplish more... in less time.

Get the P100-To-Go monthly program disk.



Make your life easier! Save hours of time from typing in lengthy programs. Never worry again about typing errors. Have more fun with *Portable 100's* new disk-of-the-month service. Every program from the magazine is included on each month's disk. No typing. No trouble.

We make it easy and inexpensive. You deserve value. At *Portable 100* we believe in value. That's why we're not only making each month's programs available on 100K Tandy Portable Disk Drive disks, we're also making sure any extra room on each disk is packed with interesting and fun bonus programs. All files are in .DO format. Ready to load. Ready to go.

Not just for the Tandy 100.

The *P100-To-Go* disks will work with any computer that uses the Tandy Portable Disk Drive, the Brother FB100, and the Purple Computing Portable Disk Drive. This means your NEC-8201/8300, Tandy 100/102, Tandy 200, Olivetti M10, and Kyotronic KC-85 can all load these programs into memory (once loaded, changes for specific computer models may be required, refer to corresponding program article for information about compatibility with particular computers).

Subscribe and save! You can order *P100-To-Go* disks individually at only \$9.95, but for maximum savings sign up for our **Six-pack Special**, one disk each month for six months, six disks, for only \$47.70. Save over 30%, a savings of \$2.00 per disk.

☐ **Yes!** Save me hours of typing time. Sign me up for your **Six-pack Special** (6 monthly disks of the Portable 100 programs, plus the special bonus programs included with every disk) for only \$47.70.

- ☐ June '88 single issue *P100-To-Go* disk, \$9.95.
- ☐ July/August '88 single issue *P100-To-Go* disk, \$9.95.
- ☐ September '88 single issue *P100-To-Go* disk, \$9.95.
- ☐ October '88 single issue *P100-To-Go* disk, \$9.95.
- ☐ November '88 single issue *P100-To-Go* disk, \$9.95.
- ☐ December '88 single issue *P100-To-Go* disk, \$9.95.

Prices include postage and handling. Please allow 4-6 weeks for delivery. Foreign airmail add \$2 per disk. All foreign, US Funds drawn on US banks only.

- ☐ Payment enclosed (check or money order)
- ☐ Mastercard ☐ VISA ☐ Amex

To place your order immediately, call: 1-603-924-9455

CARD NUMBER

EXP. DATE

SIGNATURE

NAME

STREET ADDRESS

P.O. BOX

CITY

STATE ZIP

Mail to: Portable 100, P100-To-Go,
P.O. Box 428, Peterborough, NH 03458-0428

ON
THE
COVER:
Our Christmas
card to you.

Photo by
Richard Brayshaw.
Concept by
Mike Nugent.



Tandy 102

THE ART OF GENERATING EXPENSE REPORTS... (REVISITED)

by Name Withheld by Request
Eliminate the drudgery simply and painlessly.

8



Tandy 200

AND HOW LONG TILL CHRISTMAS NOW, DADDY?

by Ted McKosky, Jr.s
Answer this question easily and rationally, with this handy program.

12

TAMING THE 200

by Michael Heim, Ph.D.
Shortcuts to suping up your Tandy 200

15



Tandy 600

A WATCHDOG FOR YOUR NICD'S

by Stephen R. Lankton
Just how much time /charge does your 1400LT's battery have left, anyway?

20

CALLING TEXT FROM BASIC

by Mo Budlong
Here's how to make it a round trip.

22



Tandy 1400LT

DEPARTMENTS

ROM WITH A VIEW	3
I/O	4
FORUM	6
NEW PRODUCTS	25
DEFUSR	27
THE CUSTOM 200	29
PORTABLE 100 CLASSIFIEDS	31
ADVERTISER'S INDEX	32

ROM WITH A VIEW

Greetings

October is an awkward time to write about Christmas, to find the proper feel and spirit amid the daily high-speed tumble. Computers, programs, readers, advertisers, deadlines. Always running. Always "on."

Suddenly, a snowball whizzes past! And the noise of the world fades away beneath the delighted laughter of my little girl, Shannon. What luck that she visited during an early fall snow. Ah, there's my Christmas! For a while, magazines, computers, and deadlines give way to an impromptu snowball fight. To laughter, closeness, and love.

I hope our cover conveys that. Business continues as usual, of course, inside the magazine, but I wanted the cover to be our Christmas card to you. If it seems a little corny, well, that's okay. Sometimes we are a little corny.

As the "new" Portable 100 ends its first year, we can look around and count our blessings. They are many. Your support and loyalty has been foremost among them. Through many a storm you've stood by us. And it's coming back to you now. Good things are happening. Thank you!

Let's congratulate *Custom 200* columnist, Paul Globman, whose marvelous XOS operating system enhancement package recently took second place in the Model 100 Forum's annual programming contest on CompuServe. Nice work, Paul!

New blessings: King Computer Services just released a BASIC-to-ROM compiler for the Model 100/102! Yup! (See their new ad in this issue.) How's that for support? Naturally, we'll mess around with it and give you all the details in a future issue.

More blessings: PCSCG is in our ads now. Of their many fine products, probably best known is the classic *Super ROM*, combining word processing, database, outliner, and the very capable *Lucid* spreadsheet, all on a chip. Glad to have you aboard, PCSCG!

Thanks for old blessings: You won't see Traveling Software for a while after this issue. They plan to advertise only in October, November, and December from now on. Though they've said they always make money in *Portable 100*, they feel there's more to be made in the MS-DOS market. Seems a shame to abandon a profitable clientele, but that's their choice. They supported us during some rough times, and we're thankful. Here's hoping their plans change, because you readers need, and should know about, their excellent products.

As important as computers are to you, and certainly to us, some things are even more so. Like happy kids and snowball fights. Big hands holding little ones. Loving and being loved. We just forget sometimes or take it for granted, that's all. So my gift to you is a little reminder. If there's someone special nearby, maybe you should put this magazine down for a moment. Go and give 'em a big hug, and tell them just how special they are.

We'll still be here when you get back.

Best wishes!

-Nuge



Toolbox

Manuscripts were typed into Microsoft Word 3.0 on a Tandy 1400 LT, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 2.0a. There they were put into a rough approximation of the magazine's final appearance. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Next, the magazine was ported over to our Art Director's Macintosh Plus, using the 1400

LT and Mac-link. She then went over the publication using Aldus Macintosh PageMaker 2.0a, making final design decisions on photo, figure, and listing sizes and placements. She precisely placed the text and added all the little things that go into making a nice looking publication.

Page previews were output from her LaserPrinter. When everyone was satisfied with the appearance, the Macintosh disk was sent to Colorite Corp. in Wisconsin for final output directly onto photographic paper. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

portable 100

CHIEF EXECUTIVE OFFICER
Marlene Butland

PRESIDENT/PUBLISHER
Terry Kepner

EXECUTIVE VICE PRESIDENT
Mark Robinson

EDITOR-IN-CHIEF
Terry Kepner

FEATURES EDITOR
David Klein

TECHNICAL EDITOR
Mike Nugent

NEW PRODUCTS EDITOR
Linda Tiernan

VISITING EDITOR
Suz Kenney

CIRCULATION MANAGER
Shauna Crowley

ADVERTISING DIRECTOR
Randy Byers

ACCOUNTING
Carrie Hebert

Portable Computing
International Corporation
145 Grove St. Ext., #21, PO Box 428
Peterborough, NH 03458-0428

Editorial
603-924-7949

Advertising
603-924-9455

Circulation
603-924-9455

Bulletin Board
603-924-9770
(300/1200—8, None, 1)

Portable 100 (ISSN 0888-0131) is published by Portable Computing International Corporation, 145 Grove Street Ext., P.O. Box 428, Peterborough, NH 03458-0428. *Portable 100* is an independent journal not connected with any hardware, software, or peripheral equipment manufacturer. *Portable 100* is published monthly, except for a combined July/August issue in the summer. Entire contents Copyrighted 1988 by Portable Computing International Corporation. All Rights Reserved. No part of this publication may be reproduced without written permission from the publisher. Portable Computing International Corporation makes every effort to assure the accuracy of articles published in *Portable 100*, but assumes no responsibility for damages due to errors or omissions. Subscription Service: All subscription correspondence should be addressed to *Portable 100*, Portable Computing International Corporation, 145 Grove Street Ext., P.O. Box 428, Peterborough, NH 03458-0428. U.S. subscription rates: \$24.97, one year; \$45.97 two years. Canada and Mexico: US\$27.97, one year; US\$51.97 two years. All other foreign (surface mail): US\$44.97, one year; US\$85.97 two years. Foreign Air Mail, add US\$50 per subscription year. All payment, except Canada, U.S. funds drawn on U.S. Bank. Second-class postage paid at Peterborough, NH 03458, and at additional mailing offices.

POSTMASTER: Send address changes to: Portable 100, Portable Computing International Corporation, 145 Grove Street Ext., PO Box 428, Peterborough, NH 03458-0428.

PORTABLE CLAIRVOYANCE?

Once again I find myself needing to relate my feelings about the new *Portable 100*. It would seem all I have to do is think of an idea, and behold, the next month's issue in some form deals with that idea. It is certainly the case with September's articles: *HOTKEY*; *Custom 200*; and *End Your Computer's Solitude*. Thanks for being there for us.

I am hoping you can help me with two questions. First, how can I get a copy of the technical manual for both the PDD-1 and PDD-2? Second, is *Portable 100* planning any maintenance type articles, like how to make adjustments on the Model 100 and PDD, preventive maintenance, and so forth—articles that will show us how to check to see if everything is working to specs?

Bernard Upshaw
Landover, MD

Radio Shack stores can order manuals for you. Except for the very newest equipment, a manual's catalog number is simply the equipment's catalog number with the prefix MS for service manuals and MU for user manuals. Service manuals cover maintenance procedures, but if there's enough interest in such articles, we'll certainly run 'em.

-MN

TWISTED PAIR

Dale Edmondson (October '88 *I/O*) will be pleased to know that an article has already been written telling how to construct a Model 100 modem cable. I wrote it. It's in *80-Micro*, Dec. '83, pp. 244-6.

Bob Scott's article on 450 baud was fascinating, as was the sidebar. Keep up the good work.

Carl Oppedahl
New York, NY

Aha! I knew I'd seen an excellent article on the subject but couldn't remember where. Thanks, Carl! Don Penner has also submitted an article describing his method. I hope to print both of them soon.

Incidentally, Carl is the author of many computer articles as well as the books *Inside the Model 100* (see ad in this issue) and *The Telephone Book* (available through Weber Systems, Inc.).

-MN

SORRY, SIS!

I enjoyed reading your review of the

Gold Card in the October '88 *Portable 100*. One thing bothered me, though. I'm sure it was just a witty slip of the tongue, but for the sake of impressionable young readers out there I think it should be corrected.

When introducing the Gold Card's ROM Eliminator, you said "This option lets you copy ROMs to a Gold Card. Then you can give the ROMs to your sister." While copying the ROMs is legal, and giving them to your sister is legal (usually; it depends on the program's license agreement), doing both is definitely not! It violates the copyright on the ROM and deprives the author of the ROM code of payment for his effort.

*Does that mean
you are also
one of "those"
Wayne Green
Publications?*

Faced with fears of lost profits from this kind of "code sharing," companies tend to respond by doing unpleasant things, such as not developing new programs and booby-trapping programs in subtle ways to make them harder to copy—unfortunately, it usually makes them harder to use and less reliable, too. Let's not give companies any excuse for that, shall we?

Brad Whitlock
Raleigh, NC

Whoa! You're absolutely right, Brad! I hadn't noticed the implication there, and I wouldn't want anyone to think it's okay to actually do that. That's stealing, and it's illegal. If my sister had a computer, I might have caught the slip. So give her a computer instead, and let her get her own software. (Sorry, Nancy!) Thanks for pointing that out, Brad!

-MN

KEPNER, NOT GREEN

I recently purchased a Tandy 200 and have picked up your magazine from time to time at the local book store. I understand that most Model 100 basic programs will run on the 200, providing there are no *PEEK*'s, *POKE*'s, and *CALL*'s.

My question to you, sir, is, whenever a program will run both on the 100/200, will you so state in the first paragraph of the article?

My second question to you is, before you print a program, does your office verify that it will run?

My third question is, where can I obtain a listing of the *BASIC* program differences between the 100 and 200?

I have spent many many wasted hours with programs that just don't run, from publications like *73* and *Kilobaud*. I finally learned not to waste my time constructing projects and entering programs from either of those magazines.

I see that you are also in Peterborough, NH. Does that mean you are also one of "those" Wayne Green Publications? I would like to know the above before I subscribe to your magazine.

Is there any way I can obtain a response from you without having to see it printed several months from now in your "Centronics, not Epson" column?

Your reply will be sincerely appreciated.

Dan Babin
Sherman, TX

Most M100 programs run on the 200 under the conditions you stated. When applicable, we list compatibility information above the article's title and any required changes at the end, and whenever possible, we test programs before publication. M100/200 differences have been addressed in various back issues and several files on the major on-line information services; I know of no single listing that covers it all. Portable 100 is not connected with Wayne Green. Although I've sent you a letter, personal replies normally require that you include a SASE. By the way, I like your up to date letterhead!

-MN

BEST OF BOTH WORLDS

Your October '88 article by Stephen R. Lankton on the CMS Hard Drive for the 1400LT was superb!

I own both a Model 100 and a 1400LT

and appreciate you covering the 1400LT also. Do you plan to include more articles and tips on the LT? It seems that the LT will be the next Model 100 in popularity. I hope you are a part of it. Thanks for your service and please renew my subscription!

Michael Rybinski
Springfield, VA

For many Tandy notebook users, the 1400LT will be their next machine (and vice versa). Since P100 is a magazine for Tandy laptops, we try to run one 1400LT article a month. This month, Stephen reviews Battery Watch from Traveling Software. Please feel free to share any hints and tips of your own.

-MN

WEIGHT WATCHERS

I judge a magazine by the content. This one is not fat! It is very sparse and of little content. If it doesn't get better, this will be my last year.

Larry Rickard
McKean, PA

If thickness alone is important, perhaps you'd find the New York City Yellow Pages more appealing. It's plenty hefty and full of information—even some fiction!

I'm with you in wanting a fatter P100, and I think you'll get your wish. Thanks for giving it a chance. Meantime, we still pack a lot of good info into the space we have. And fortunately for some, we don't judge our readers strictly on density.

-MN

TURN UP THE HEAT!

Let's get frank with the readers and tell them the task of putting out a bigger *Portable 100* depends on a large increase in advertising content with accompanying advertising dollars. Encourage the readers to help by telling software vendors, "I might be interested in SLOPPY.BA or JUNK.CO if I saw it advertised along with a review in *Portable 100*."

Bless Traveling Software, Ultrasoft Innovations, and the rest of the loyal gang listed on page 32 of this October issue. Without their support *Portable 100* would disappear again. That list is way too short; it should fill the entire page!

The subscription dollar accounts for only 15-20 percent of a magazine's cost and is barely more than the cost of postage. Let's put the heat on the vendors. Don't leave out the MS-DOS lap jobs, for programs written for the 100-102-etc. can run in them too, if they're not system specific.

I often write programs for my spouse's 102 with my Tandy 1000. We have COSTS.BA to keep track of our expenses when traveling. I wrote it with *DeskMate*.

We Tandy loyalists saw what happened to 80-Micro when the advertising dollar disappeared. I'm not entirely sure what happened, but I suspect it was caused by reviews written a bit too candid, along with outright criticism of some vendors, possibly justified, but sharp enough to scare them and other vendors away. No one likes to have to grow another five pounds of backside after a national review of his product.

I would love to see *Portable 100* as thick as *Vogue*, but a count of advertising pages will show WHY the postman hates it when *Vogue* is in his mail bag. Let's make the postman earn his wages delivering *Portable 100*!

Walt Stevenson
Pittsburg, KS

Well put, Walt! 80-Micro dropped TRSDOS support, thereby losing half their subscribers in one year, and thus, the TRSDOS advertisers. MS-DOS advertisers thought, "Why use 80-Micro now when more people read PC World and PC magazine?"

**Here's the best
part--an outbreak
of hernias
within the
postal system!**

*Our base coverage is notebooks, since over 90 percent of you own them. We won't drop them. They're what *Portable 100* is all about! As for reviews, we prefer to report on what's good and useful—not wasting space on the worst products—but still pointing out any problems or idiosyncrasies so you'll know what you're getting.*

To grow, we all need each other—reader, advertiser, and magazine. It's a community. It's your magazine, and you have more power to help than anyone else. Use it. More ads means more magazine and more products for you, and—here's the best part—an outbreak of hernias within the postal system!

-MN

FORTHRIGHTNESS

I've discovered that there is a glitch in the FIG4TH CALL word that garbles the called addresses. The way the call was built left the bytes in numerical order, but

Used Laptops

We Buy, Sell & Horsetrade

Popular Computers

Model 100	\$275.
Model 102	325.
Model 200	325.
Model 600	400.
Disk-video I'face	115.
Disk Drives	Call
MS-DOS	Call
Apple & IBM Parts	Call

Shreve Systems

2421 Malcolm St.
Shreveport, LA 71108
318-865-6743
FAX 318-865-2006

Circle 20 on reader service card.

they must be reversed as an 8085 address. Here's how to fix it:

- Load FIG4TH (kernel only, for disk systems) into RAM
- In BASIC, CALL 41216 to cold start FIG4TH
- Type: HEX 73 B505 C! 72 B507 C! DECIMAL and press ENTER
- Type: HERE U. (note this number)
- Type: BYE to exit FIG4TH
- In BASIC type: SAVEM "FIG4TH.CO", 41216, (number from HERE), 41216 and press ENTER to save the "fixed" figFORTH.

Now you can save this back to disk or tape to replace the original version. Sorry to have caused the problem.

Keep up the good work.

David O. Rowell
Marietta, NY

?IO—CORRECTIONS

Relax, the programs are fine! I just didn't update the text in the articles after modifying the programs. FRAZY-OL-OGY (Oct. '88, p. 8)—textual references to line 540 actually describe line 582 in the program. ENVPTTR.BA (Nov. '88, p. 15)—renumbered this puppy: line 13 became 70, 17-19 became 110-130, and 32-34 became 250-270. (Please don't tell the authors, okay? Maybe they won't notice!)

-MN



We welcome all letters from our readers, whether critical or complimentary. We print as many letters as space permits (some are edited for space considerations). Address your correspondence to: Portable 100, I/O Dept., P.O. Box 428, Peterborough, NH 03458-0428.

CALL TO 1400LT OWNERS

When the Tandy 1400LT computer was first released, they did not include Software Registration cards for the MS-DOS and BASIC that was included with the computer. Current production does include this card.

If you didn't get a card, contact your store and ask them to be sure you are registered. Names and addresses must be sent in by a store, on store letterhead, so don't try to send it in yourself. Contact the store you bought it from, and ask them to do it for you.

From Tandy User Group Newsletter (Sept. '88), Tandy Corp./Radio Shack.

7-BYTE DOS

I received the September 1988 *Portable 100* today, and per the article on page 21, I poked in the DOS FLOPPY patch. I did everything as noted, except that when I SAVEM'd it I typed 59400,59400,59400 instead, and this saves 3362 bytes. On the menu now NEWDOS.CO only takes up 7 bytes where it used to take up 3359, and it only uses more bytes when it is running. I've been doing this with FLOPPY for a long time to save precious memory. NEWDOS.CO seems to work fine after saving it with these addresses.

H.E. Boulware
Vichy, MO

A word of caution: Normally, when a .CO file is run from the menu, the entire file, except for 6 bytes of "header" information, is copied to high memory and then executed there. In the technique above, only one byte (7 bytes minus header) is copied to high memory, so the rest of the file must already be there. This means that once you've SAVEM'd the 7 bytes, the rest of the file must remain in high memory, undisturbed. Running other programs which use that area of memory or raise the HIMEM pointer will corrupt the code. Then nasty things will happen when you run NEWDOS or FLOPPY again. For more information on this technique, see "Conserving Precious Memory" (Nov. '85, Portable 100).

-MN

HELPFUL KILL FUNCTION

We are all familiar with the tedious chore of deleting individual files from the M100 screen, with or without the aid of the helpful KILL function now included in many commercial programs. Purge

programs I have tried in the past nicely delete text files but fail to delete .BA programs, coming to a screeching halt with an OK prompt whenever a .BA program has been knocked off.

For some time now, I have been using the following scheme to purge groups of files, including .BA files, without interruption (other than a few taps on the F4 key). The scheme involves setting up a KEY.BA file, which may be routinely used for defining function keys, and individual ERASE.BA files for each group of files one wishes to delete—the latter is stored along with that group. Running the purge program simply entails placing the menu cursor over ERASE.BA, pressing ENTER, and tap-

*This may be
individualized
to suit one's needs.*

ping the function key F4 a few times, and presto—the entire file package has been deleted, .BA files and all!

Listing 1, KEY.BA.

This may be individualized to suit one's needs. I use the following with my Chipmunk drive:

```
1 PRINT@126, "press F4 when Ok/Run
  appears"
2 CALL 23164,0,23366 :CALL 27795
  'for cold start default function keys
3 ON ERROR GOTO 11
4 C$=CHR$(13)
5 KEY6, "Lfilesoff"+C$+"MENU"+C$
6 KEY7, "Call0"+C$
7 POWER CONT
8 SOUND OFF
9 KILL "ERASE.BA"
```

```
10 CALL 0 'may substitute "MENU"
  if not using drive
11 RESUME NEXT
```

Listing 2, ERASE.BA.

This is, of course, just one example of an individualized ERASE.BA program. I use the following to delete my renumbering program package, but just use the template to create your own ERASE programs.

```
1 PRINT@126, "press F4 when Ok/Run
  appears"
2 ON ERROR GOTO 4
  :KILL "STARTR.BA"
  :KILL "RENUM.BA"
  :KILL "RENUM.CO"
3 RUN "KEY.BA"
4 RESUME NEXT
```

The number of files being deleted is inconsequential, and the program will kill any type of file. For groups of files frequently used, it can be a great time saver.

Henry Glover, M.D.
Glendale, CA

CONNECTING MODEM TO MODEM

I have seen articles in different magazines and books stating the only way to connect a Model 100 and a Tandy 1000 (or any other two computers for that matter), is going RS-232 to RS-232 via a null modem adapter. The RS-232 seems to be optional on most PC compatibles, but if you have installed an internal modem, there is another way — modem to modem. On the M100, connect the beige cable directly to the modem on the other computer, use originate mode, M711E, and press TERM (F4). On the desktop, use parameters 300 E71, and in the TERM mode type ATA. This causes the modem to go off-hook, answering the M100.

Thomas E. Wagner
Hyde Park, MA

BAREFOOT PROGRAMMING

Here are some "gimmicks" I use that might be interesting or fun for non-programmers like me.

Open a TEXT file (I use WORK.DO).

Be sure the printer is ready to go, and type the following:

```
BASIC
LPRINT TIME$, "YOUR NAME"
MENU
WORK.DO
```

Copy the above using *SELECT* and *COPY*. Press *F8* and then *PASTE*. You should end up with the time and your name on the printer, and be back in the *.DO* file you started from. That is, you issued commands and information from the file you were working in and returned.

Open a *TEXT* file, any name you like (I use *NOTE.DO*), and type the following:

```
BASIC
OPEN "NOTE" FOR APPEND AS 1
PRINT#1, TIME$
PRINT#1, "Any text you choose"
PRINT#1, DAY$ "Mix and Match"
      "DATE$"
CLOSE
MENU
NOTE.DO
```

Copy the above with *SELECT* and *COPY*. Now press *F8* to go to *MENU* and press *PASTE*. You will end up in the file you named and you will find the time and your text printed at the top of the file if it was empty, and at the end of the file otherwise. You have issued orders from a working file and this time received information back, again without leaving the file.

If you type *TEXT*, or *SCHEDL* (or any other menu item) on the *Select* line, it is the same as using the wide cursor bar, (everybody knows that!). But it makes a two-way street between files, *BASIC*, and the other menu functions.

The example above is a good way to watch a *BASIC* program in action. Part of it is a *BASIC* program, only the line numbers are missing. But the *Select* line allows reentry to *TEXT* and all other functions, and vice versa.

It is flexible and easy to do for non-hackers like me. It is also a lot of fun. For example, you can add *DATE*\$, *DAY*\$, and get the remaining memory—*FRE(0)*—by typing them on the same *PRINT#1* line. You can add text by typing *PRINT#1*, "text goes here" *TIME*\$. You can have one *PRINT#1* or as many as you need. Don't forget the quotes when you add text.

Substitute 2+2 for *TIME*\$ and you can see a new possibility. Also, change the file name that is opened in the second line, and you will send info to another file and return. Even paste lines from one file to another by putting them between quotes.

If you are using *POWER-DOS* or a similar type of program you can send info to the disk and be returned to your working file.

Sending info to the cassette or *LPT*: requires changing the word *APPEND* to *OUTPUT* in the open line. *OUTPUT* will cause the named file to be killed and replaced by the new info. Use caution if you're not too familiar with the terms yet.

If you are writing a report (or whatever) that uses a lot of specific data, such as the weight of a Buick in grams or the circumference of the earth, the following might help.

Put the data in *NOTE.DO*. Then in the file you are working on, type the following.

```
SCHEDL
LFND (search word)
MENU
WORK.DO (or whatever name you
      choose)
```

Again *SELECT* and *COPY*. Press *F8* then *PASTE*. If the printer is ready, the information you need will be printed,

Here is another "barefoot" hint!

and you will end up in the file you are working with. You can type several *LFND*'s. I normally use single sheets in the printer so I'll have the info on the printer in case I forget it. When you think about it, the printer is really an 8.5 x 11-inch screen for the Model 100.

Here is another "barefoot" hint. Open a new file in *TEXT* and name it *B*. Then, using lower case (NO CAPS!) type the following.

```
basic
2 hello dere!
3 your name
1 some one else's name
save "b".a
menu
b.do
```

Again, *SELECT* and *COPY*. Press *ESC*

twice (or *F8* once), and then press *PASTE*. You will end up in *TEXT* file *B.DO* and only the numbered lines will be present. They will be in capitals, and they will be in numerical order.

This may look very simple and maybe useless but it has the following effect. It converts lower case to all upper case, which most "home-brew" databases require. It changes the order of the numbers to normal. It also provides a means of storing your databases on cassette in 1/3 the space and, therefore, 1/3 the time to *CLOAD* or *CSAVE*. If you enter *BASIC* and press *F5* (*List*) you will see the same two lines. You can now *CSAVE* them to cassette the same way you would a *BASIC* program! *BASIC* will automatically change these lines into a compressed form. I know that cassettes are not used much, but this is the way I backup my *.DO* files, and it gives me something useful to do with the old cassettes I got stuck with when I bought the disk drive and *POWER-DOS*.

Don't forget that you now have two copies of *B.DO*—one on the menu as a *.DO* file and another in *BASIC* as a program that you can't *RUN*! However you can *CSAVE* it to cassette in compact form and in upper case. Also, you can edit it by typing *EDIT* and pressing *ENTER*. You can look at it by using *F5*, or you can erase an entire line by typing just the number of the line in *BASIC* and pressing *ENTER*. If you don't want upper case, just put an apostrophe or type *REM* after the number. Type *NEW* and press *ENTER* to erase this pseudo-program from *BASIC*.

All of this may seem too simple to most, but the Model 100 is used in so many ways with so many different items of hardware and software, they may prove useful. Non-hackers like me should be able to have fun with them and be able to develop their own applications.

Eugene Miller
Wolf Summit, WV



Forum is where you can show off your expertise and help your fellow readers! Address your tips, hints, and techniques to: Portable 100, Forum Dept., P.O. Box 428, Peterborough, NH 03458-0428.

COMPATIBILITY: Tandy 100/102/200, Olivetti m10, Kyocera KC-85, NEC PC-8201A/8300 (with modifications); Untested: Tandy 600, 1400LT

The Art of Generating Expense Reports ... (Revisited)

by Name Withheld by Request

Ten years later, and the MBA's at the Big Company are still doing their expense reports the same way! Will they ever learn? No wonder the government is de-regulating.

EXPNS.BA was written sometime in 1978 on what was then *the* computer of the industry, the Altair. It was written because I was tired of having to figure out breakfast-lunch-dinner, breakfast-lunch-dinner, breakfast-lunch-dinner for days on end. All dollar amounts had to agree both horizontally and vertically to the magic amount at the lower right-hand corner. Sometimes this seemed an impossibility.

Expense reports aren't bad for a one-day or two-day trip. But imagine a three-week, four-week or even a two-month expense report! Enough to drive you up a proverbial wall. On that big one it took me two days of adding columns and rows to make everything add up correctly (and with luck, to the amount of the advance I had left). Sure, the idea of writing down everything you spend for meals in a little book is OK for about a week. Then the entries start to get messy a day or two later as Motel Syndrome settles in. (What? Eat at a hamburger joint and then have fun, fun, fun at night? Well, maybe once in a while.)

EXPNS.BA is about the only really practical value I have ever found for the random-number generator function of BASIC. Are you starting to get the idea? What do they know and what do they care, as long as the horizontal and vertical dollar amounts check out with the value in the lower-right hand corner? It works!

EXPNS.BA has, of course, been modified, slimified, and graphified for the Model 100 family of computers. You might notice a new command or two in the menus, but other than that, it still satisfies the need: "Get your expense report done, TODAY!"

No, I am not cheating on expense reports; I am playing the game by their own rules. But I'm just trying to make my work a little easier. In other words, this program uses the random number generator for a practical application other than the *usual* guessing game. It lets your computer do your guessing for you.

Let's look at the company rules for expense reports.

- Receipts are needed for rooms.
- Receipts are needed for car rental.
- Receipts are needed for gasoline.

I am playing the game by their own rules.

- Receipts are *not* needed for meals (our ace in the hole).
- Receipts should average about \$15 a day, depending on area.
- Meals should be reasonably priced.
- No expenses allowed (on my level) for fun, fun, fun.
- All the horizontal (daily) rows must add up.
- All Vertical rows must add up.
- Spending too little will mess up your buddies on their next trip.

The program has an EXEC mode. Its special commands include the following:

- PRINT REPORT (P). Generates a complete matrix with horizontal totals, including a total report.
- SPECIAL (S). Inserts items such as laundry, taxi, etc. by a given date.
- CHANGE MEALS (C). Allows a positive or negative vertical increase on the meal of your choice (e.g. all the dinners

should be increased about \$1.50 more). This change happens on all nonzero meals.

- RE-RANDOMIZE MEALS (X). Means that you have decided after all to take the (N) path for the standard meal deductions.
- DISPLAY DATE (D). Changes one of the five variable elements. This is how you zero a meal (e.g. breakfast for the first day was zero since you didn't fly out till 9 A.M.).
- COMMANDS AGAIN (?). Reprints the commands in case you get mixed up.
- ROOM RATE (R). Allows a complete overhaul of the room-rate structure (better have receipts).

Other commands include TOTALS (T) and END (E). ITERATIVE MEAL INCREASE (I) is perhaps the most interesting command. If, for example, your unaccountables are \$280.56 and you would like to reduce this item to \$250.00 (because you're too cheap to make up the difference), the command calculates how much to add to all nonzero meals so that the total unaccountables will equal what you have specified. This portion of the program takes time and will go through three or four passes until it gets the unaccountables to your specified values. Relax and watch the lights blink. Remember: the alternative is to run the horizontal and vertical sums with a calculator ... or pay.

Now, eat at the hamburger stand; then you can afford to have fun, fun, fun!

Bibliography: "The Art of Generating Expense Reports," KILBAUD, December 1978, author's name withheld.

Editor's note: be sure to have the CAPS key locked down when running this program.

NEC modifications: replace all occurrences of PRINT@n, (where n equals some value) with LOCATE nMOD40, n\40:PRINT.

-MN


```

10 CLS:PRINT@48,"EXECUTIVE EXPENSE GENER
ATOR":PRINT@162,"Copr.1984, Gold Mine Ga
ng Enterprises":REM 12/22/88
20 CLEAR1000:RV$=CHR$(27)+"p":NV$=CHR$(2
7)+"q":DATA31,28,31,30,31,30,31,31,30,31
,30,31
30 SEC=VAL(LEFT$(DATE$,2))+VAL(MID$(DATE
$,3,2))+VAL(RIGHT$(DATE$,2))+VAL(LEFT$(T
IME$,2))+VAL(MID$(TIME$,3,2))+VAL(RIGHT$
(TIME$,2))
40 FORD=1TOSEC:X=RND(1):NEXTD:GOTO70
50 PRINT@287,"PRESS ANY KEY TO CONTINUE
";
60 TS=INKEY$:IFT$=""THEN60ELSEPRINTTS;:C
LS:RETURN
70 CLS:PRINT@165,"# OF DAYS";:INPUTDY
80 DIMA(DY,5),R$(DY),MZ(12)
90 CLS:PRINT@165,"START DATE MM,DD,YY";:
INPUTMM,DD,YY
100 D1$=RIGHT$(STR$(MM),LEN(STR$(MM))-1)
+"/"
110 D1$=D1$+RIGHT$(STR$(DD),LEN(STR$(DD)
)-1)+"/19"
120 D1$=D1$+RIGHT$(STR$(YY),LEN(STR$(YY)
)-1)
130 IFMM>12ORDO>31ORABS(INT(MM))<>MMORAB
S(INT(DO))<>DO THENBEEP:GOTO90
140 FORN=1TO12:READMZ(N):NEXT:IFINT(YY/4
)=YY/4 THENMZ(2)=29
150 N=1
160 FORN1=DDTOMZ(MM):A(N,0)=MM*100+N1
170 N=N+1:IFN>DY THEN200
180 NEXTN1:DD=1:MM=MM+1:IFMM=13 THENMM=1:
YY=YY+1
190 GOTO160
200 D2$=RIGHT$(STR$(MM),LEN(STR$(MM))-1)
+"/"
210 D2$=D2$+RIGHT$(STR$(N1),LEN(STR$(N1)
)-1)+"/19"
220 D2$=D2$+RIGHT$(STR$(YY),LEN(STR$(YY)
)-1)
230 CLS:PRINT@11,"REPORT WILL COVER ":P
RINT:PRINTTAB(5);D1$;" TO ";D2$
240 PRINT@165,"STARTING DOLLARS YOU HAD"
;:INPUTSD
250 CLS:PRINT@165,"DOLLARS YOU ENDED UP
WITH";:INPUTEV
260 SD=INT(100*SD):EV=INT(100*EV)
270 C=0:CLS
280 PRINT@165,"ROOM RATE";:INPUTRR:RR=IN
T(100*RR):Q=RR:R=6
290 CLS:PRINT@165,"# OF DAYS AT RATE ";:
GOSUB2510:INPUTT
300 IFC+T>DY THENCLS:PRINT@165,RV$;"** IM
POSSIBLE **";NV$:BEEP:GOTO270
310 FORN=1TOT:A((C+N),4)=RR:NEXTN
320 C=C+T:IFC<DY THENCLS:PRINT@85,"DAYS R
EMAINING ";DY-C:GOTO280
330 IFFL<>0 THEN500
340 TS="":CLS:PRINT@85,"STANDARD MEAL DE
DUCTIONS";:PRINT@165,"(Y)ES OR (N)O ";:G
OSUB60
350 AB=1.5:AL=2.5:AD=6.5:BS=.2:LS=.5:DS=
.75:D1=-3:D2=3
360 IFT$="N" THEN390

```

continued

```

370 IFT$<>"Y" THENBEEP:GOTO340
380 GOTO510
390 TS="":CLS:PRINT@160,"AVERAGE BREAKFA
ST $1.50 (Y)ES OR (N)O ";:GOSUB60
400 IFT$="Y" THENAB=1.5:GOTO430
410 IFT$<>"N" THENBEEP:GOTO390
420 CLS:PRINT@165,"AVERAGE BREAKFAST WAS
";:INPUTAB
430 TS="":CLS:PRINT@160,"AVERAGE LUNCH W
AS $2.50 (Y)ES OR (N)O ";:GOSUB60
440 IFT$="Y" THENAL=2.5:GOTO470
450 IFT$<>"N" THENBEEP:GOTO430
460 CLS:PRINT@165,"AVERAGE LUNCH WAS ";:
INPUTAL
470 TS="":CLS:PRINT@160,"AVERAGE DINNER
WAS $6.50 (Y)ES OR (N)O ";:GOSUB60
480 IFT$="Y" THENAD=6.6:GOTO510
490 IFT$<>"N" THENBEEP:GOTO470
500 CLS:PRINT@165,"AVERAGE DINNER WAS ";
:INPUTAD
510 FORN=1TODY
520 GOSUB1050:A(N,1)=AB+INT(100*R*BS)/10
0
530 A(N,1)=INT(100*A(N,1))
540 GOSUB1050:A(N,2)=AL+INT(100*R*LS)/10
0
550 A(N,2)=INT(100*A(N,2))
560 GOSUB1050:A(N,3)=AD+INT(100*R*DS)/10
0
570 A(N,3)=INT(100*A(N,3))
580 NEXTN
590 GOSUB780:GOSUB880
600 FL=1:CLS:PRINT@15,"EXEC MODE":PRINT
610 PRINT"P=PRINT REPORT L=LPRINT REPO
RT"
620 PRINT"C=CHANGE MEALS X=RE-RANDOMIZ
E MEALS"
630 PRINT"D=DISPLAY DATE S=SPECIAL"
640 PRINT"R=ROOM RATE I=ITERATIVE I
NCREASES"
650 PRINT"T=TOTALS E=END"
660 PRINTTAB(25);"YOUR CHOICE ?";:GOSUB6
0
670 IFT$="P" THEN1130
680 IFT$="L" THENLP=1:GOTO1400
690 IFT$="C" THEN1920
700 IFT$="X" THEN390
710 IFT$="D" THEN2030
720 IFT$="S" THEN1760
730 IFT$="R" THEN270
740 IFT$="I" THEN2310
750 IFT$="T" THENGOSUB780:GOSUB880:GOTO60
0
760 IFT$="E" THENMENU
770 CLS:PRINT@175,RV$;"** ERROR **";NV$:
BEEP:GOTO600
780 BT=0:LT=0:DT=0:RT=0:ST=0
790 FORN=1TODY
800 BT=BT+A(N,1)
810 LT=LT+A(N,2)
820 DT=DT+A(N,3)
830 RT=RT+A(N,4)
840 ST=ST+A(N,5)
850 NEXTN
860 UA=SD-(BT+LT+DT+RT+ST+EV)

```

continued

CREATIVE FINANCE

```

870 RETURN
880 CLS:R=6:Q=BT:PRINTTAB(5);"BREAK. = "
;:GOSUB2510:PRINT"      TOTALS"
890 R=6:Q=LT:PRINTTAB(5);"LUNCH = ";:GO
SUB2510:PRINT
900 R=6:Q=DT:PRINTTAB(5);"DINNER = ";:GO
SUB2510:PRINT
910 R=6:Q=RT:PRINTTAB(5);"ROOM = ";:GO
SUB2510:PRINT
920 R=6:Q=ST:PRINTTAB(5);"SPCL. = ";:GO
SUB2510:PRINT
930 IFLP=0THENPRINT:PRINTTAB(5);"START V
ALUE = ";
940 IFLP=1THENLPRINT:LPRINTTAB(5);"START
VALUE = ";
950 Q=SD:GOSUB2510
960 IFLP=0THENPRINT:PRINTTAB(5);"END VAL
UE = ";
970 IFLP=1THENLPRINT:LPRINTTAB(5);"END V
ALUE = ";
980 Q=EV:GOSUB2510
990 Q=BT+LT+DT+RT+ST
1000 IFLP=0THENPRINT:PRINTTAB(5);"TOTAL
NOW = ";:GOSUB2510:PRINT
1010 IFLP=1THENLPRINT:LPRINTTAB(5);"TOTA
L NOW = ";:GOSUB2510:LPRINT
1020 IFLP=0THENPRINTTAB(5);"UNACCOUNTED
= ";:Q=UA:GOSUB2510:PRINT
1030 IFLP=1THENLPRINTTAB(5);"UNACCOUNTED
= ";:Q=UA:GOSUB2510:LPRINT:RETURN
1040 GOSUB50:RETURN
1050 R=INT(10*RND(1)):IFR=5THEN1050
1060 IFR>5THENR=R-5:GOTO1080
1070 R=-R
1080 IFR<0ANDR<D1THEN1050
1090 IFR>0ANDR>D2THEN1050
1100 RETURN
1110 PRINT:PRINT:PRINT
1120 FORN=1TO15:PRINT"- ";:NEXT:PRINT
1130 :CLS:PRINT
1140 PRINTTAB(5);"EXPENSE REPORT COVERIN
G ":PRINT:PRINTTAB(5);D1$;" TO ";D2$
1150 GOSUB50
1160 FORN=1TODY
1170 T=0:FORX=1TO5:T=T+A(N,X):NEXTX
1180 R=6:Q=A(N,1):CLS:PRINTTAB(5);"BREAK
. = ";:GOSUB2510
1190 T$=STR$(A(N,0))
1200 PRINT;"      DATE ";LEFT$(T$,LEN(T$)
-2);"/";RIGHT$(T$,2)
1210 R=6:Q=A(N,2):PRINTTAB(5);"LUNCH =
";:GOSUB2510:PRINT
1220 R=6:Q=A(N,3):PRINTTAB(5);"DINNER =
";:GOSUB2510:PRINT
1230 R=6:Q=A(N,4):PRINTTAB(5);"ROOM =
";:GOSUB2510:PRINT
1240 R=6:Q=A(N,5):PRINTTAB(5);"SPECIAL=
";:GOSUB2510
1250 IFR$(N)<>" "THENPRINT" FOR ";R$
(N)ELSEPRINT
1260 R=6:Q=T:PRINTTAB(5);"TOTAL = ";:GO
SUB2510:PRINT:GOSUB50
1270 NEXTN
1280 PRINT
1290 GOSUB780

```

```

1300 CLS:
1310 R=6:Q=BT:PRINTTAB(5);"BREAK. TOTL. "
;:GOSUB2510:PRINT"      ";DY;"DAYS"
1320 R=6:Q=LT:PRINTTAB(5);"LUNCH TOTL. "
;:GOSUB2510:PRINT
1330 R=6:Q=DT:PRINTTAB(5);"DINNER TOTL. "
;:GOSUB2510:PRINT
1340 R=6:Q=RT:PRINTTAB(5);"ROOM TOTL. "
;:GOSUB2510:PRINT
1350 R=6:Q=ST:PRINTTAB(5);"SPCL. TOTL. "
;:GOSUB2510:PRINT
1360 R=6:Q=BT+LT+DT+RT+ST:PRINTTAB(5);"G
RAND TOTL. ";:GOSUB2510:PRINT
1370 GOSUB50
1380 GOSUB930
1390 GOTO600
1400 LPRINT:LPRINT:LPRINT
1410 FORN=1TO15:LPRINT"- ";:NEXT:LPRINT
1420 LPRINT:LPRINT
1430 LPRINTTAB(10);"EXPENSE REPORT COVER
ING ";D1$;" TO ";D2$
1440 LPRINT:LPRINT:LPRINT
1450 LPRINT" DATE BREAK. LUNCH DINN
ER ROOM SPECIAL REASON";
1460 LPRINT"      TOTAL"
1470 LPRINT
1480 FORN=1TODY
1490 L=0
1500 T$=STR$(A(N,0))
1510 LPRINTLEFT$(T$,LEN(T$)-2);"/";RIGHT
$(T$,2);
1520 FORK=1TO5:L=L+A(N,K):NEXTK
1530 R=6:Q=A(N,1):LPRINTTAB(8);:GOSUB251
0
1540 R=6:Q=A(N,2):LPRINTTAB(15);:GOSUB25
10
1550 R=6:Q=A(N,3):LPRINTTAB(23);:GOSUB25
10
1560 R=6:Q=A(N,4):LPRINTTAB(31);:GOSUB25
10
1570 R=6:Q=A(N,5):LPRINTTAB(39);:GOSUB25
10
1580 IFR$(N)<>" "THENLPRINTTAB(48);R$(N);
1590 R=7:Q=L:LPRINTTAB(59);:GOSUB2510:L
PRINT
1600 NEXTN
1610 LPRINT
1620 FORN=1TO65:LPRINT"="";:NEXT:LPRINT:L
PRINT
1630 GOSUB780
1640 T$=STR$(DY):T$=RIGHT$(T$,LEN(T$)-1)
:LPRINTT$;" DAYS";
1650 R=6:Q=BT:LPRINTTAB(8);:GOSUB2510
1660 R=6:Q=LT:LPRINTTAB(15);:GOSUB2510
1670 R=6:Q=DT:LPRINTTAB(23);:GOSUB2510
1680 R=6:Q=RT:LPRINTTAB(31);:GOSUB2510
1690 R=6:Q=ST:LPRINTTAB(39);:GOSUB2510
1700 R=7:Q=BT+LT+DT+RT+ST:LPRINTTAB(59);
:GOSUB2510:LPRINT
1710 LPRINT
1720 GOSUB930:LPRINT:LPRINT
1730 FORN=1TO15:LPRINT"- ";:NEXT:LPRINT
1740 LPRINT:LPRINT:LPRINT:LPRINT:LPRINT
1750 LP=0:GOTO600
1760 INPUT"DATE OF SPECIAL MM,DD";MM,DD

```

continued

continued


```

:GOSUB2470
1770 IFE=1THEN1760
1780 IFR$(N)=" "THEN1850
1790 PRINTMM;" / ";DD;"SHOW ";:Q=A(N,5):GO
SUB2510
1800 PRINT" FOR ";R$(N)
1810 PRINT"CHANGE (Y)ES OR (N)O ";:GOSUB
60
1820 IFT$="Y"THEN1850
1830 IFT$="N"THEN1900
1840 IFT$<>"N"THENBEEP:GOTO1810
1850 INPUT"AMOUNT OF PURCHASE ";A(N,5)
1860 A(N,5)=INT(100*A(N,5))
1870 IFA(N,5)=0THENR$(N)=" ":GOTO1900
1880 INPUT"REASON OF PURCHASE ";R$(N)
1890 IFLEN(R$(N))>8THENR$(N)=LEFT$(R$(N)
,8)
1900 GOSUB780:Q=UA:CLS:PRINT:PRINT:PRINT
"UNACCOUNTABLES ARE ";:GOSUB2510
1910 PRINT:GOSUB50:GOTO600
1920 T$=" ":CLS:PRINT@165,"WHICH MEAL B,
L, OR D ";:GOSUB60
1930 IFT$="B"ORT$="L"ORT$="D"THEN1950
1940 BEEP:GOTO1920
1950 IFT$="B"THEN1950
1960 IFT$="L"THEN1950
1970 IFT$="D"THEN1950
1980 CLS:PRINT@160,"AMOUNT OF CHANGE (+
OR -) X.XX";:INPUTC
1990 C=INT(100*C)
2000 FORN=1TODY:IFA(N,T)<>0THENA(N,T)=A(
N,T)+C
2010 NEXTN
2020 GOSUB780:GOSUB880:GOTO600
2030 INPUT"DATE YOU WISH DISPLAYED MM,DD
";MM,DD
2040 GOSUB2470:IFE=1THEN2030
2050 T=0:FORX=1TO5:T=T+A(N,X):NEXTX
2060 R=6:Q=A(N,1):CLS:PRINTTAB(5);"BREAK
. = ";:GOSUB2510
2070 T$=STR$(A(N,0))
2080 PRINT;" DATE ";LEFT$(T$,LEN(T$)
-2);"/";RIGHT$(T$,2)
2090 R=6:Q=A(N,2):PRINTTAB(5);"LUNCH =
";:GOSUB2510:PRINT
2100 R=6:Q=A(N,3):PRINTTAB(5);"DINNER =
";:GOSUB2510:PRINT
2110 R=6:Q=A(N,4):PRINTTAB(5);"ROOM =
";:GOSUB2510:PRINT
2120 R=6:Q=A(N,5):PRINTTAB(5);"SPECIAL=
";:GOSUB2510
2130 IFR$(N)<>" "THENPRINT" FOR ";R$
(N)ELSEPRINT
2140 R=6:Q=T:PRINTTAB(5);"TOTAL = ";:GO
SUB2510:PRINT:GOSUB50
2150 CLS:PRINT@165,"CHANGE VALUE (Y)ES
OR (N)O ";:GOSUB60
2160 IFT$<>"Y"ANDT$<>"N"THENBEEP:GOTO215
0
2170 IFT$="N"THENGOSUB780:GOTO600
2180 T$=" ":CLS:PRINT@165,"B/L/D/R/S ";:G
OSUB60
2190 IFT$="B"ORT$="L"ORT$="D"ORT$="R"ORT
$="S"THEN2210
2200 BEEP:GOTO2180

```

```

2210 CLS:PRINT@165,"NEW VALUE IS ";:INP
UTK
2220 K=INT(100*K)
2230 IFT$="B"THENP=1
2240 IFT$="L"THENP=2
2250 IFT$="D"THENP=3
2260 IFT$="R"THENP=4
2270 IFT$="S"THENP=5
2280 IFP=5ANDK<>0ANDR$(N)=" "THENINPUT"RE
ASON OF PURCHASE";R$(N)
2290 A(N,P)=K:IFP=5ANDK=0THENR$(N)=" "
2300 GOTO2060
2310 GOSUB780:PRINT"UNACCOUNTABLES ARE $
";:Q=UA:GOSUB2510
2320 PRINT:INPUT"REDUCE TO WHAT VALUE";T
2330 T=INT(100*T)
2340 IFT>UATHENPRINT"***MUST BE LESS**:BE
EP:GOTO2090
2350 CLS:Z=1000:R=7
2360 PRINT@176,RV$;Z;NV$;:IFZ*3*DY>ABS(U
A-T)THENZ=Z-1:GOTO2360
2370 IFZ=0THENZ=1
2380 CLS:PRINT@165,"ITERATING BY";:Q=Z:G
OSUB2510:PRINT
2390 FORX=1TODY
2400 FORY=1TO3
2410 IFA(X,Y)<>0THENA(X,Y)=A(X,Y)+Z
2420 GOSUB780
2430 IFUA<=TTHENPRINT:GOSUB880:GOTO600
2440 NEXTY:NEXTX
2450 IFZ<>0THENZ=Z-1:CLS:GOTO2360
2460 GOTO2390
2470 FORN=1TODY:IFA(N,0)=MM*100+DDTHENE=
0:RETURN
2480 NEXTN:E=1
2490 PRINT"NO SUCH DATE AS ";MM;"/";DD:R
ETURN
2500 PRINT2271;Q$
2510 Q$=STR$(Q):Q$=RIGHT$(Q$,LEN(Q$)-1)
2520 IFQ=0THENQ$="0.00":GOTO2580
2530 IFLEN(Q$)=2THENQ$="."+Q$
2540 IFLEN(Q$)=1THENQ$="."+Q$
2550 IFQ<0THENQ$="-"+Q$
2560 IFLEFT$(Q$,1)=". "ORLEFT$(Q$,2)="- ."
THEN2580
2570 Q$=LEFT$(Q$,LEN(Q$)-2)+". "+RIGHT$(Q
$,2)
2580 R=R-LEN(Q$)
2590 IFLP=0ANDR>0THENPRINT" ";:R=R-1:GOT
O2590
2600 IFLP=1ANDR>0THENPRINT" ";:R=R-1:GO
TO2600
2610 IFLP=0THENPRINTQ$;:IFR=-99THENPRINT
SPC(5);
2620 IFLP=1THENPRINTQ$;:IFR=-99THENPRI
NTSPC(5);
2630 RETURN

```

continued

End of listing.

COMPATIBILITY: Tandy 100/102/200 (Tandy 600, NEC PC-8201A/8300 available on GEnie Laptops RT)

And How Long Till Christmas Now, Daddy?

Here's how to answer even to your child's satisfaction.

by Ted McKosky, Jr.

Yes, Virginia, there is a Santa Claus, and he will be here in exactly 6,710,614 seconds from the time I started writing this article. You, too, can be privy to this important information once you have *SANTA.BA* up and running on your Model 100.

The program is really quite simple except for a few curves thrown by the people who worked out the calendar. The basic problem involves figuring out how many seconds there are between right now and Christmas, a pretty straightforward problem. Convert today's date into the number that represents that day of the year; then subtract that number from 358. (I'm assuming that Santa arrives a hair's breadth after midnight of the 24th.) This is done in lines 470 through 620—a somewhat primitive solution, but it works.

**I didn't think there
would be any interest in
ol' St. Nick *after* he arrived.**

When I first wrote the program, I didn't think there would be any interest in ol' St. Nick *after* he arrived, at least not for quite some time. But I found people checking the day after Christmas, and the disappointed looks on their faces forced me to add lines 50 and 620. Line 50 tells the program to look at next year, and line 620 corrects the day of the year for the dates that fall between December 25th and December 31st.

Line 70 checks for leap year and then adjusts the day of the year that Christmas falls on. Line 600 does the same thing and then increases the year of the day by one after February.

Lines 240 through 320 calculate the time remaining before midnight to determine the fractional part of the day left. Lines 340 through 370 calculate the seconds until Santa's arrival, and from that, the days, hours and minutes.

```

1 'SANTA.BA from Barking Dog Software
2 '(C) 1987 Ted McKosky
3 'GEnie address T.MCKOSKY
4 'Home Board BIS (703) 951-2920
10 CLS
20 YR = 1900+VAL(RIGHT$(DATE$,2))
30 XM=358
40 'Looks for date between 12/25 and 12/
31 to increment the year
50 IF LEFT$(DATE$,5) >"12/24" AND LEFT$(
DATE$,5) < "12/32" THEN YR =YR+1
60 'Fix Christmas position during Leap Y
ear
70 IF YR MOD 4=0 AND YR MOD 100>0 THEN
XM=XM+1
80 GOSUB 470
90 LINE(72,5)-(170,17),1,B
100 'Draws the Christmas tree
110 Y=200: Y2=200
120 FOR X=30 TO 57 STEP2
130 Y = Y-1: Y2=Y2+1
140 LINE(Y,X)-(Y2,X)
150 NEXT X
160 LINE(197,57)-(203,63),1,B
170 PRINT @153,"*"
180 'Draws Christmas graphic
190 FOR X = 1 TO 244
200 READ X1,Y1,X2,Y2
210 LINE(X1,Y1)-(X2,Y2)
220 NEXT X
230 'Calculates the seconds until midnig
ht
240 H=23-VAL(LEFT$(TIME$,2))
250 PRINT @153,"*"
260 'Sets the time delay increase CT=20

```

continued

Listing 1. *SANTA.BA*. Amaze your friends and family with a program that shows the exact time until Santa arrives.

Lines 390 through 440 display the results of the time calculations and then refresh the screen so the numbers are kept up to date. If you are thinking about converting *SANTA.BA* for other computers, watch out for the *PRINT@* statements. (By the way, when typing *DATA* lists like this, I have found it really helpful to read them orally into a tape recorder at my typing speed and then play it back while I type the numbers in.)

Since a Christmas program contains more than numbers, lines 110 through 220 create the special graphics that accompany the time display. The Christmas tree was pretty simple, but Santa took some work. His image is contained in the *DATA* statements at the end of the program. These numbers are the coordinates for the *LINE* statement in line 210.

The trick is determining the coordinates. I did this by printing the image on graph paper and defined the relative coordinates—not one of the most pleasant tasks you can imagine, I'm sure, but it really adds a finishing touch to the display. While enduring this tedium, I conceptualized a much easier way to do this, which eventually led to the development of a system that allows complex graphics to be created easily for the Model 100. But *that*, Virginia, is another story. ...

Feel free to contact me with any questions or comments in the LapTops RoundTable on GENIE. *SANTA.BA* can also be found there for you to download. My GENIE address is *TMCKOSKY*, or you can contact me through the BIS BBS at (703) 951-2920.



Ted McKosky, Jr., is the Associate Director of Telecommunications and an assistant professor at Radford University in Radford, VA; he manages the college radio station, WVRU, and is assistant sysop at GENIE's LapTops RoundTable.

to increase display time

```

270 CT=CT+1: IF CT=20 THEN MENU
280 M=59-VAL(MID$(TIME$,4,2))
290 S=60-VAL(RIGHT$(TIME$,2))
300 SH=(H*60)*60
310 SM=M*60
320 TS=SH+SM+S
330 'Calculates the time until Christmas
340 CS=((XM-YD)*86400!)+TS
350 HC=CS/3600
360 MC=CS/60
370 PD=TS/86400!
380 'Display the time left until Christmas
as
390 PRINT @53,"Santa comes in:"
400 PRINT @135,USING"###";XM-YD;:PRINT @
138,USING".####";PD;:PRINT" days"
410 PRINT @173,USING"#####.####";HC;:PRI
NT" hours"
420 PRINT @212,USING"#####.####";MC;:PR
INT" minutes"
430 PRINT @252,USING"#####";CS;:PRI
NT" seconds"
440 PRINT @153," ":FOR T=1 TO 30: NEXT T
:GOTO 230
450 END
460 'Calculates the day of the year
470 IF LEFT$(DATE$,2) = "01" THEN YD = V
AL(MID$(DATE$,4,2))
480 IF LEFT$(DATE$,2) = "02" THEN YD = 3
1+VAL(MID$(DATE$,4,2))

```

continued

```

490 IF LEFT$(DATE$,2) = "03" THEN YD = 5
9+VAL(MID$(DATE$,4,2))
500 IF LEFT$(DATE$,2) = "04" THEN YD = 9
0+VAL(MID$(DATE$,4,2))
510 IF LEFT$(DATE$,2) = "05" THEN YD = 1
20+VAL(MID$(DATE$,4,2))
520 IF LEFT$(DATE$,2) = "06" THEN YD = 1
51+VAL(MID$(DATE$,4,2))
530 IF LEFT$(DATE$,2) = "07" THEN YD = 1
81+VAL(MID$(DATE$,4,2))
540 IF LEFT$(DATE$,2) = "08" THEN YD = 2
12+VAL(MID$(DATE$,4,2))
550 IF LEFT$(DATE$,2) = "09" THEN YD = 2
43+VAL(MID$(DATE$,4,2))
560 IF LEFT$(DATE$,2) = "10" THEN YD = 2
73+VAL(MID$(DATE$,4,2))
570 IF LEFT$(DATE$,2) = "11" THEN YD = 3
04+VAL(MID$(DATE$,4,2))
580 IF LEFT$(DATE$,2) = "12" THEN YD = 3
34+VAL(MID$(DATE$,4,2))
590 'Corrects for Leap Year
600 IF LEFT$(DATE$,2) > "02" AND YR MOD 4
=0 AND YR MOD 100 > 0 THEN YD=YD+1
610 'Creates day of year when date falls
between 12/25 and 12/31
620 IF LEFT$(DATE$,5) > "12/24" AND LEFT$
(DATE$,5) < "12/32" THEN FX = 31-VAL(MID
$(DATE$,4,2)): YD = - FX
630 RETURN
640 'Graphics coordinates
650 DATA 43, 1,47, 1,40, 2,50, 2,38, 3,5
2, 3,36, 4,54, 4,35, 5,55, 5,33, 6,58, 6
660 DATA 31, 7,49, 7,58, 7,60, 7,29, 8,4
6, 8,60, 8,61, 8,27, 9,44, 9,61, 9,62, 9
670 DATA 25,10,43,10,62,10,63,10,24,11,4
3,11,63,11,63,11,23,12,42,12,63,12,64,12
680 DATA 22,13,41,13,64,13,64,13,21,14,4
1,14,64,14,65,14,20,15,40,15,65,15,66,15
690 DATA 19,16,39,16,66,16,66,16,19,17,3
9,17,66,17,67,17,18,18,38,18,67,18,67,18
700 DATA 18,19,38,19,67,19,68,19,18,20,3
7,20,68,20,68,20,17,21,37,21,68,21,68,21
710 DATA 17,22,36,22,68,22,68,22,17,23,3
6,23,53,23,61,23,68,23,68,23,16,24,35,24
720 DATA 50,24,53,24,61,24,64,24,67,24,6
8,24,16,25,35,25,43,25,55,25,64,25,67,25
730 DATA 16,26,34,26,39,26,43,26,47,26,4
8,26,56,26,56,26,65,26,66,26,16,27,34,27
740 DATA 37,27,39,27,42,27,42,27,46,27,4
6,27,57,27,57,27,63,27,66,27,15,28,37,28
750 DATA 41,28,42,28,45,28,45,28,48,28,5
4,28,57,28,57,28,61,28,62,28,67,28,67,28
760 DATA 15,29,32,29,41,29,41,29,45,29,4
7,29,55,29,56,29,60,29,60,29,68,29,68,29
770 DATA 15,30,32,30,41,30,41,30,59,30,5
9,30,63,30,67,30,15,31,35,31,40,31,41,31
780 DATA 46,31,46,31,48,31,53,31,59,31,6
2,31,64,31,64,31,15,32,30,32,35,32,36,32
790 DATA 40,32,40,32,47,32,48,32,50,32,5
1,32,53,32,54,32,59,32,59,32,61,32,62,32
800 DATA 64,32,64,32,15,33,29,33,33,33,3
4,33,36,33,36,33,40,33,40,33,45,33,46,33
810 DATA 50,33,51,33,59,33,62,33,64,33,6
5,33,15,34,29,34,32,34,32,34,36,34,36,34

```

continued

TRAVEL CASE PLUS+ IS A PORTABLE MINI WORK STATION



- Computer and disk drive attach to the removable plastic tray
- The Tandy 102 or 200 can remain connected to your disk drive
- Unzip navy blue padded nylon case, adjust typing easel, turn on switch and begin work
- Large front pocket will hold a TTXpress or Diconix 150 Printer
- Dimensions: 12.5" x 14" x 3"

Tray also fits:

- Model 100
- NEC 8201A
- Chipmunk Drive

Case without tray holds:

- NEC Multispeed
- Toshiba 1100+



**SIMONS
PRODUCTS**

10908 GLEN WILDING LANE
BLOOMINGTON, MN 55431
PHONE (612) 881-7221

Travel Case+ \$85.00 • Case w/o tray \$70.00
Return within 15 days if not satisfied.

Check, Money Order, Visa, M/C
(Minnesota residents add 6% sales tax).
Add \$5.00 for shipping/handling in U.S.A.

Circle 60 on reader service card

CUSTOMIZE YOUR TANDY 200!

Now you can take advantage of Paul Globman's Custom 200 programs without spending hours typing and even more hours debugging.

That's right, *The Custom 200* programs that make your Tandy 200 friendlier and more efficient are now available on Tandy 100K Portable Disk Drive disks. So far we have two sets of disks to offer:

Disk Set 1—Reverse Bank Switching, Displaying Three Directories At Once, Multi-Tasking and Background printing, and Program Chaining.

Disk Set 2—Cross-Bank Pasting, Cross-Bank BASIC, and Cross-Bank Telcom.

☐ Please send me Disk Set #1 for \$14.95.

☐ Please send me Disk Set #2 for \$14.95.

☐ Please send me both sets for \$29.90.

PAYMENT MUST ACCOMPANY ORDER

☐ CHECK ENCLOSED ☐ MC ☐ VISA

Total enclosed: _____

CARD# _____

EXP. DATE _____ Be sure to include entire card number

NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

**Portable 100, Custom 200 Disks, P.O. Box 428,
Peterborough, NH 03458**

820 DATA 40,34,40,34,48,34,52,34,60,34,6
0,34,65,34,65,34,15,35,29,35,32,35,32,35
830 DATA 40,35,40,35,47,35,47,35,53,35,5
3,35,60,35,60,35,65,35,66,35,15,36,29,36
840 DATA 32,36,32,36,40,36,40,36,46,36,4
6,36,54,36,54,36,60,36,60,36,66,36,66,36
850 DATA 15,37,27,37,29,37,29,37,32,37,3
2,37,40,37,40,37,42,37,42,37,46,37,46,37
860 DATA 60,37,61,37,66,37,66,37,15,38,2
7,38,29,38,30,38,33,38,33,38,40,38,40,38
870 DATA 42,38,42,38,55,38,55,38,61,38,6
1,38,66,38,66,38,70,38,70,38,14,39,26,39
880 DATA 30,39,30,39,34,39,34,39,40,39,4
0,39,42,39,43,39,57,39,58,39,61,39,61,39
890 DATA 65,39,66,39,68,39,70,39,9,40,2
5,40,30,40,31,40,40,40,45,40,54,40,61,40
900 DATA 65,40,65,40,67,40,68,40,70,40,7
0,40,7,41,9,41,14,41,24,41,31,41,32,41
910 DATA 36,41,36,41,41,41,42,41,45,41,5
4,41,61,41,67,41,70,41,70,41,6,42,7,42
920 DATA 13,42,23,42,32,42,36,42,42,42,4
3,42,69,42,70,42,5,43,6,43,16,43,22,43
930 DATA 36,43,36,43,43,43,44,43,68,43,6
9,43,5,44,5,44,17,44,20,44,36,44,36,44
940 DATA 44,44,46,44,53,44,59,44,66,44,6
8,44,4,45,5,45,18,45,18,45,36,45,37,45
950 DATA 46,45,53,45,59,45,66,45,3,46,
4,46,18,46,18,46,37,46,37,46,51,46,52,46
960 DATA 54,46,58,46,60,46,61,46,66,46,6

continued

7,46,3,47,3,47,18,47,19,47,37,47,37,47
970 DATA 52,47,52,47,60,47,60,47,67,47,6
8,47,2,48,3,48,19,48,19,48,37,48,38,48
980 DATA 52,48,53,48,59,48,60,48,67,48,6
8,48,2,49,2,49,19,49,19,49,21,49,31,49
990 DATA 38,49,38,49,53,49,59,49,68,49,6
8,49,2,50,2,50,19,50,34,50,38,50,39,50
1000 DATA 68,50,68,50,2,51,2,51,18,51,
37,51,39,51,39,51,68,51,68,51,2,52,3,5
2
1010 DATA 18,52,40,52,68,52,69,52,3,53,
3,53,17,53,41,53,69,53,69,53,3,54,4,5
4
1020 DATA 15,54,43,54,69,54,69,54,4,55,
6,55,13,55,44,55,69,55,70,55,6,56,7,5
6
1030 DATA 11,56,45,56,70,56,70,56,7,57,
46,57,70,57,70,57,10,58,47,58,70,58,71,5
8
1040 DATA 10,59,48,59,71,59,71,59,10,60,
49,60,71,60,71,60,9,61,50,61,71,61,72,6
1
1050 DATA 9,62,51,62,72,62,72,62,9,63,
52,63,72,63,73,63
1060 END

End of listing.

Taming The 200

This one is souped-up and civilized.

by Michael Heim, Ph.D.



Forget other laptops, the Tandy 200 is the writer's perfect companion. Not just fresh off the shelf, but once it's properly tamed. With a few enhancements and a careful setup, the Tandy 200 outdoes Toshiba and NEC when it comes to writing in the portable mode.

As a writer, I need a light-weight computer, one I can stash in a knapsack or briefcase. If it weighs over six pounds, forget it. It has to be lightweight so I don't get a backache walking to my office or across campus. And a truly companionable computer doesn't need booting up with a separate DOS system or special word processing program every time I want to use it. Just press a button for instant-on.

I don't want to be chained to wall sockets. The computer's portable power should last at least thirty hours or more, so I don't have to worry about batteries or electrical outlets while I'm working. Also important is the ability for easy uploading to the IBM desktop so I can store files for further processing. And it helps if the computer is so rugged that I can drop it on the patio, pick it up, and keep on computing.

Besides freedom from a tiresome disk-operating system (DOS), I need a built-in outliner or idea processor that I can use on the run. When I'm working on an article or report, I turn to my idea processor and continue organizing or rearranging notes. Then I hit the power button to avoid battery loss or let the pre-set POWER timer do it automatically in two minutes. Later, I hit the button again and the outline pops up on screen, waiting for the next set of ideas. No program loading, no battery loss.

I need a screen that displays letters so big and comfortable that I don't have to wear my glasses if I don't feel like it or if I'm working in bed. No phosphorescent light to tire the eyes. I need a big screen I can see when tilted to my viewing angle, not one for presenting graphics or text for other eyes to see.

Finally, I need plenty of storage space so I can run a calendar-appointment program as well as keep on tap my 200K of chapters and works-in-progress.

Ok, you might say, I've just written the job description of the Model 100/102 outfitted with SuperROM and a PG Design RAM bank, powered by two A.R.M.S. NiCd battery add-ons.

I did find great usefulness for my old Model 100. That little computer accompanied me everywhere for years, even abroad. It went with me to the Acropolis in Athens in 1984 where, perched on my knees as I sat on the ancient stones, the 100 held the first chapters of *Electric Language: A Philosophical Study of Word Processing*, the first book about the impact of software on human thought processes. This same M100 now keeps track of checks, dials phone numbers, and is in general a secondary resource. But the Model 200 is now my daily companion—simply because its screen offers much more to work with. But straight off the shelf the 200 is far from an ideal notebook,

```

1  F$="TASK.DO":CALL61162,13,VARPTR(F$):C
ALL61162,23,VARPTR(F$):F$="DIARY.DO":CAL
L61162,13,VARPTR(F$):CALL61162,23,VARPTR
(F$)
3  CLEAR1000:MAXFILES=3:DEFINTB-Z:DEFSTRA
,C-E,G,L,Q,T,V:DF="TASK.DO":M$="JanFebMa
rAprMayJunJulAugSepOctNovDec":DG="012345
6789":D="SunMonTueWedThuFriSat":Q="30323
2332323"
7  E=CHR$(27):VI=E+CHR$(112):VO=E+CHR$(11
3):ET=E+"T":EU=E+"U":EP=E+"P":EQ=E+"Q":E
J=E+"J":EK=E+"K":AR=CHR$(8)+CHR$(29)+CHR
$(28)+CHR$(30)+CHR$(31)+CHR$(1)+CHR$(6)+
CHR$(20)+CHR$(2)+CHR$(17)+CHR$(18)+CHR$(
23)+CHR$(26)+CHR$(127)
10 M=VAL(LEFT$(DATE$,2)):DZ=VAL(MID$(DAT
E$,4,2)):YY=VAL(RIGHT$(DATE$,2))+1900:L1
="View      Prev Next      Sort Men
u":L2="":L3="":L4=" "
15 ONKEYGOSUB74,142,144,146,149,,154,166
:KEYON
16 KEYSTOP:PRINTVO;EQ;:ZZ=YY-1900
17 IFZZ/4=INT(ZZ/4)THENMID$(Q,2,1)="1"EL
SEMID$(Q,2,1)="0"
18 Z=M:P=M:IFZ<3THENZ=Z+12:YY=YY-1
19 Z=Z+1
20 RS=0:D!=INT(365.25*YY)-INT(YY/100)+IN
T(YY/400)+INT(30.6*Z)+1-478164
21 W=INT(7.1*(D!/7-INT(D!/7)))+1:ML=28+V
AL(MID$(Q,M,1)):YY=ZZ+1900
22 CLS:PRINT@200," S M T W T F S "
23 J=2-W
24 FORX=1TO7
25 IFJ=DZTHENPA=CSRLIN*40+POS(0):PD=X:PT
=J
26 IFJ<10RJ>MLTHENPRINT " ";ELSEPRINTUS
ING" ##":J;
27 J=J+1:NEXTX:PRINT " "
28 IFJ<=MLTHEN24ELSEO=0:LINE(153,5)-(205
,33),1,B
29 PRINT@67,MID$(M$(M-1)*3+1,3)" "MID$(
STR$(ZZ),2)
30 PRINTEU;:PRINT@600,ET:L1;:KEYON

```

Continued

Listing 1. The calendar program TIME.BA. The last line contains a strange left bracket before MENU. This strategy is required for running all .BA files in RAM from the Node Datapac to prevent corrupting the RAMDSK that calls up Node. This program also illustrates the way .CO files should be handled from the Node.

because it needs several enhancements and has to be set up carefully.

However, taming the 200 required that I unleash some of its power, similar in some ways to developing its sibling 100/102. With both, I need Super ROM installed. The advertising claims are right; Super ROM from PCSG is indispensable for the tamed 100/200. Also, the *THOUGHT* idea processor surpasses all other outliners—public domain or commercial—by its speed and functionality. I've tried them all on the IBM, and idea processing is best done on Super. Once I install Super, I can format and print text from the computer as well as work with *Lucid*, a fine integrated spreadsheet/database.

Besides Super, the 200 needs mounds of additional memory. The three banks of nineteen available kilobytes are puny. So you can order the Node Datapac with 256K of luxurious file space, enough room for a small book or several chapters of a large one.

COMPATIBILITY CONFLICTS

But here lurk compatibility problems. Off the shelf, Node and Super do not mix. Each requires a ROM chip for installation, where unfortunately only one ROM socket is open for business on the 200. Which gets it? On the ideal computer you must have both.

Getting around this dilemma requires another add-on, the

The three banks of nineteen available kilobytes are puny.

Safe ROM adaptor from PG Design. Safe makes it possible to use more than one snap-in ROM; you can switch between ROM's using its small software program.

Good enough, but there's another problem. The Safe ROM sockets are contained in a plastic housing that attaches underneath the computer. Safe is designed to fit underneath at the rear, bottom of the computer in the same spot occupied by the Node Datapac. Again, which gets it? Here you can make a minor adjustment and eat your cake too. Even a technoklutz like me can remove the four screws holding in the IC board of the Safe, turn the board 180 degrees around, and replace it in the housing. Now Safe can fit at the front end of the computer. Since Safe is the same thickness as the Node pack, they balance out each other nicely, making the computer sit up level at your fingertips.

Now you have 256K of memory and Super installed. But wait! There is another hitch—at least there was for me because I had three banks installed in the 200. The software for accessing the Node Datapac (*RAMDSK*), the software for switching ROM's in Safe, and the software access code for Super do not live peaceably together. I got frequent cold starts in one or two banks of the 200 when I turned the computer off and on several times. Cold starts are disconcerting even if you find ways of protecting your data, such as always storing it in the Node Datapac when

```

31 IFRSTHEN15ELSEPRINTVI;
32 IFRSTHEN15ELSEPRINT@PA,USING"##";PT;:PRINTVO;
33 IFRSTHEN15ELSECM=INKEY$:IFLEN(CM)=0TH
ENFORX=1TO25:NEXTX:GOTO31
34 IFCM=" "THENCN=CHR$(28)
35 IFCM=CHR$(13)THENGOSUB74:GOTO15
36 ONINSTR(AR,CM)+1GOTO37,38,38,44,49,54
,38,44,49,54,38,44,49,54,38
37 GOTO31
38 PRINT@PA,USING"##";PT;:PA=PA-3:DZ=D
Z-1:IFDZ>0THEN42
39 M=M-1:IFM<1THENYY=YY-1:M=12
40 DZ=28+VAL(MID$(Q,M,1)):IFY/4=INT(YY/
4)ANDM=2THENDZ=DZ+1
41 GOTO15
42 P1=PAMOD40:PT=DZ:IFP1<0ORP1>18THENPA=
PA-19
43 GOTO31
44 PRINT@PA,USING"##";PT;:PA=PA+3:DZ=D
Z+1:IFDZ<=MLTHEN47
45 DZ=1:M=M+1:IFM>12THENM=1:YY=YY+1
46 GOTO15
47 PT=DZ:P1=PAMOD40:IFP1>18THENPA=INT(PA
/40)*40+40
48 GOTO31
49 REM
50 PRINT@PA,USING"##";PT;:DZ=DZ-7:PA=P
A-40:IFDZ>0THEN42
51 M=M-1:IFM<1THENYY=YY-1:M=12
52 DZ=DZ+28+VAL(MID$(Q,M,1)):IFM=2ANDYY/
4=INT(YY/4)THENDZ=DZ+1
53 GOTO15
54 REM
55 PRINT@PA,USING"##";PT;:DZ=DZ+7:PA=P
A+40:IFDZ<=MLTHEN47
56 M=M+1:IFM>12THENYY=YY+1:M=1
57 DZ=DZ-ML:GOTO15
58 FD=-1:PS=0:DL="/"
59 GOSUB63
60 IFPS=0THENRETURN
61 IFD1=DTTHENFD=0:RETURN
62 GOTO59
63 PS=INSTR(PS+1,A,DL):IFPS=0THENRETURN
64 D1="00/0":MID$(D1,3,1)=DL
65 IFPS>1THENMID$(D1,2,1)=MID$(A,PS-1,1)
66 IFPS>2THENMID$(D1,1,1)=MID$(A,PS-2,1)
67 IFPS<LEN(A)THENMID$(D1,4,1)=MID$(A,PS
+1,1)
68 IFPS<LEN(A)-1THENMID$(D1,5,1)=MID$(A,
PS+2,1)
69 IFINSTR(DG,MID$(D1,1,1))=0THENMID$(D1
,1,1)="0"
70 IFINSTR(DG,MID$(D1,2,1))=0THENMID$(D1
,1,2)="00"
71 IFINSTR(DG,MID$(D1,4,1))=0THENMID$(D1
,4,2)="00"
72 IFINSTR(DG,MID$(D1,5,1))=0THENMID$(D1
,4,2)="0"+MID$(D1,4,1)
73 RETURN
74 KEYSTOP:RR=0:PRINTVO;:CLS
75 DW=MID$(D,PAMOD40+1,3)
76 ONKEYGOSUB141,141,141,141,141,141,141
,139:KEYON
77 CLOSE:OPENDFFORINPUTAS1

```

Continued

All The Power
You'll Ever Need
Is Sitting Right
In Your Lap.



Traveling Software. A Powerful



BOOSTER PAK

Add 2 Megabytes of Memory to Your Tandy 100/102.

Just snap the BOOSTER PAK onto the bottom of your Tandy 100/102 and plug in two cables. That's all it takes. And you can add up to 2 megabytes of RAM or ROM or a combination of both to your Tandy 100/102. And since BOOSTER PAK is an open system, you can customize it as you go. Add more RAM or ROM software as you need it. BOOSTER PAK comes with: 136K of RAM memory, 64K of ROM software, 16 socketed slots for 32K RAM and/or ROM chips and X-TEL Communication Software. It also has provisions for a battery pak, built-in modem and TS-DOS disk software built-in. It even includes a fast action Asteroids game!

BOOSTER PAK \$499.00

LIMITED TIME SPECIAL: save \$30.00 on IBM BOOSTER LINK software with BOOSTER PAK purchase.

Five Programs On One Chip.

Five applications for the Tandy 100/102/200, and the NEC PC-8201/8300 that occupy only one file on your computer. Programs included are: T-Word—a laptop Word Processor with disk drive support; ROM-View 80—an 80-column display that lets you view 60 characters and includes scrolling; T-Base—lets you create true Relational Databases; IDEA!—a flexible organizer with an outline format; and Portable Disk Drive Support—so you don't have to store TS-DOS in your computer.

**THE ULTIMATE ROM II WAS \$239.95
NOW ONLY \$199.00***

NOTE: Tandy 200 version includes TS-DOS instead of ROM-View 80.



THE ULTIMATE ROM II

Add Up to 256K of ROM Software to Your Laptop.

The 8-ROM EXPANSION PAK gives you 8 ROM sockets to plug-in your favorite ROM software. This slim-designed ROM pack measures only 1" thick and 2½" wide. Attaches directly under the Tandy 100/102/200 or NEC PC-8201/8300. Only one connection is required to the existing ROM socket. Buy the 8-ROM EXPANSION PAK with either a four-chip set of SARDINE or Traveling Software's TS-DOS.

What is really amazing is that switching from one ROM software chip to another is done all by software—absolutely no mechanical switches!

BONUS! With each 8-ROM EXPANSION PAK w/SARDINE PLUS purchase, get TS-DOS in a ROM FREE.

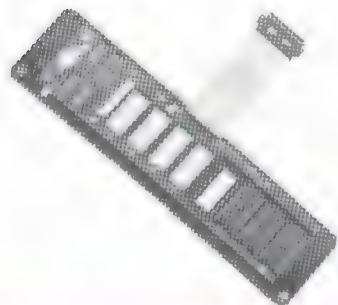
8-ROM EXPANSION PAK w/SARDINE PLUS

. \$299.00

8-ROM EXPANSION PAK w/TS-DOS in a ROM chip

. \$169.95

NOTE: If you already own a SARDINE ROM, you can upgrade it for an 8-ROM PAK for just \$129.00. The SARDINE disk version can be upgraded for just \$198.00. Call (800) 343-8080 for details.



8-ROM EXPANSION PAK

***Special! Order Now
(limited time offer).**

Connection For Your Tandy 100.



SARDINE

Your Laptop Dictionary & Spelling Checker.

Sardine is able to look up a single word in seconds. Or check a 25K document in less than three minutes. It also lets you create your own auxiliary dictionary of terms, words, names and abbreviations. Compatible with the Tandy 100/102/200 and NEC PC-8201/8300 laptop computers. Requires 16K RAM and a Tandy/Purple Computing disk drive. ROM version also includes T-Word Word Processing and text formatting.

SARDINE Disk \$99.95
SARDINE ROM ~~WAS \$109.95~~
NOW ONLY \$119.95*



TS-DOS/TS-RANDOM

TS-DOS—The Traveling Software Disk Operating System

TS-DOS is the complete operating system for Tandy and Purple Computing portable 3½" disk drives. With TS-DOS you can list files both on disk and in RAM, save to disks, load into RAM, kill and rename files. Simply by pressing a function key. With its unique "tag" feature you can load, save or kill several files at once. BASIC programming and disk access included.

TS-RANDOM—Your Rapid Access to Many Laptop Files.

For the Tandy or Purple Computing 100K disk drives. TS-RANDOM retrieves information faster than sequential access methods. Supports up to eight files for simultaneous input and output. Even includes special utilities for quick copying files and recovering erased or damaged disk files. Basic programming and disk access are also included.

TS-DOS Disk (all drives) \$69.95
TS-DOS ROM (all drives) \$99.95
TS-RANDOM Disk (TDD #1 only) \$89.95
TS-RANDOM ROM ~~WAS \$149.95~~
(TDD #1 only) NOW ONLY \$119.95*



MAC-DOS II

Connects Your Mac to Your Laptop or Tandy/Purple Computing Portable Disk Drive.

MAC-DOS II gets your Mac and laptop "talking" by the connection of our three-connector cable. It lets you read, edit and print files created with your laptop as easily as

regular Macintosh files. Transfers files between your Tandy M100/102/200 or NEC PC-8201/8300 laptop and any version of the Macintosh at speeds up to 19,200 baud instantly. Also includes a Tandy disk drive adapter for optional direct disk access.

MAC-DOS II with cable \$129.95



LAP-DOS II

Connects Your IBM Compatible Desktop to a Tandy 100/102/200, NEC PC-8201/8300 or Tandy/Purple Computing Disk Drive.

LAP-DOS II lets your IBM or compatible "talk" directly to your laptop by the connection of our specially designed three-connector cable. Links Tandy and NEC with all IBM or compatibles including PC, XT, AT and the new PS/2 series. Transfers files at speeds up to 19,200 baud instantly. Also includes a Tandy disk drive adapter for optional direct disk access.

LAP-DOS II with cable \$129.95

**ORDER
TOLL FREE U.S.
1-800-343-8080
in Washington State
206-483-8088
Visa, MC, AMX
Accepted**

8K & 24K MEMORY CHIPS

Beef up Your Laptop's RAM With Pop-In Chips for Tandy and NEC.

8K Memory chip is easily installed in the RAM expansion sockets of the Tandy M100, 102 or NEC PC-8201. Bring your M100/102 up to 32K or your NEC 8201 up to 64K. Low power draw for long battery life. Two year warranty.

8K Chip for M-100 **\$ Call!**
 8K Chip for M-102 **\$ Call!**
 8K Chip for NEC **\$ Call!**

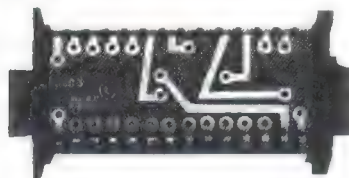
24K Memory chip for the Tandy 200 installs in less than two minutes. The only tool you will need is a coin to open the hatch. Install two of these chips to give your M200 72K of RAM. Made especially for the Tandy 200 expansion compartment, these chips have a low power requirement and come with a two year warranty.

24K Chip for M-200 **\$ Call!**

CUSTOM SERVICES

We Convert Your Program Into a Plug-in Rom Chip.

Now you can have your own programs burned onto an EPROM so they will work just like the built-in ROM software already in your TANDY 100/102/200 or NEC 8201/8300. It's the ideal way to free-up your RAM memory for data storage and also make your programs copy protected. Our patented Flexible Circuit Board allows you to change your programs and to have your EPROM re-burned at substantially lower prices. Overnight service ensures that we can meet your schedule. Our service is guaranteed or your money back. Quantity pricing as low as \$41.00 each. No minimum quantity. Call for your free ROM information kit.



Add \$2.25 for COD orders. No personal checks for CODs over \$300. Please add \$5.00 for surface shipping charges, \$8.00 for air.

Traveling Software, Inc. provides free technical support for all of its products to registered owners. All products carry a 30-day unconditional guarantee. If you are not satisfied with our product for any reason, return it within 30 days of your receipt for a prompt exchange or refund.

BOOSTER LINK

Makes Your Desktop PC Into a Disk Drive For Your Laptop Computer.

BOOSTER LINK allows you to transfer files between your desktop computer and your Tandy 100/102/200 or NEC PC-8201/8300 using a special three-connector cable and TS-DOS or any other disk operating system. It allows TS-DOS to load, save, rename and kill files directly. If you have a BOOSTER PAK or the ROM version of TS-DOS, you can also create and move from subdirectory to subdirectory with the push of a button. BOOSTER LINK comes with a cable and is available for the IBM PC, XT, AT or compatibles and all models of the Apple Macintosh.

BOOSTER LINK MAC/IBM with cable \$99.95
 BONUS! BOOSTER PAK owners save \$30.00 (limited time offer)

NOTE: BOOSTER LINK requires disk drive software to operate!

When ordering, please match your computer model with the appropriate order number listed in the following chart. This number will help us expedite your order. Thank you.

Product Name	Tandy 100	Tandy 102	Tandy 200	NEC	Macintosh	IBMs & compatibles
ULTIMATE ROM II	RS1-UR2	RS1-UR2	RS3-UR2	NE1-UR2		
SARDINE Disk	RS1-SD1	RS1-SD1	RS3-SD1	NE1-SD1		
SARDINE ROM Chip	RS1-SD2	RS1-SD2	RS3-SD2	NE1-SD2		
SARDINE 4 ROM Set for Booster Pak	RS1-SD3	RS1-SD3				
MAC-DOS II	API-MD1	API-MD1	API-MD1	API-MD1	API-MD1	
LAP-DOS II	PCI-LD1	PCI-LD1	PCI-LD1	PCI-LPD1		PCI-LD1
WORLDPORT 1200	HW1-MO2	HW1-MO2	HW1-MO2	HW1-MO2		HW1-MO3
WORLDPORT 2400	HW1-MO7	HW1-MO7	HW1-MO7	HW1-MO7		HW1-MO6
8K Memory Chip	HW1-RC1	HW2-RC1		HW1-NE1		
24K Memory Chip			HW1-RC4			
TS-DOS Disk	RS1-TS1	RS1-TS1	RS3-TS1	NE1-TS1		
TS-DOS ROM Chip	RS1-TS2	RS1-TS2	RS3-TS2	NE1-TS2		
ROM2/CLEASEAU ASSEMBLER	RS1-CL1	RS1-CL1	RS3-CL1	NE1-CL1		
BOOSTER PAK	HW1-BP1	HW1-BP2				
Options:						
32K CMOS RAM (\$29)	HW1-BP3	HW1-BP3				
6 Slot RAM Expansion Board (\$69)	HW1-BP4	HW1-BP4				
256K RAM Expansion Modules (\$299)	HW1-BP5	HW1-BP5				
Internal Nicad Battery Pak (\$69)	HW1-BP6	HW1-BP6				
IBM PC Booster Link w/cable (\$69.95)*	PCI-BL1	PCI-BL1				PCI-BL1
Sardine Plus 4 Chip Set (\$194.95)	RS1-SD3	RS1-SD3				
BOOSTER LINK (IBM)	PCI-BL1	PCI-BL1	PCI-BL1	PCI-BL1	API-BL1	PCI-BL1

*BOOSTER PAK owners and purchasers save \$30.00. Only \$69.95. Limited time offer.



Send Name, Address, Order Number, and Method of Payment.

BY MAIL



BY PHONE

Credit Card/COD Orders
 7 Days/24 Hours
 1-800-343-8080
 In Washington Call:
 206-483-8088

8:30 A.M.-5:00 P.M., P.S.T./M.F.



BY FAX

Send Your Completed Purchase Order To Traveling Software via Facsimile Transmission
 206-487-1284
 24 Hours-7 Days

Three Programs on One Chip.

Cleauseau TEXT Editor—increases the Word Processing power of your built-in TEXT program. Append to a paste buffer, search and replace, insert, overwrite, and more; Cleauseau Basic Inspector—shortens programming time by helping you find the error causing statement in a line; ROM2 Macro Assembler and Symbolic 8085 Debugger—assembles 300 lines per minute, allows you to simulate 1000 instructions per second, uses the complete 8085 instruction set, and more.

ROM2/CLEASEAU ASSEMBLER . . \$99.95



Traveling Software



North Creek Corporate Center • 18702 North Creek Parkway • Bothell, WA 98011


```

78 DT=RIGHT$("0"+MID$(STR$(M),2),2)+"/"+
RIGHT$("0"+MID$(STR$(DZ),2),2)
79 NE=0:NМ=0:ND=0
80 FL=0:IFEOF(1)THEN88
81 NE=NE+1:LINEINPUT#1,A
82 GOSUB58:IFFDTHEN80ELSEKEYSTOP
83 PRINTEU;:PRINT@600,ET;L2;:PRINT@0,"Di
ary for "DT" ("DW");:
84 NM=NM+1:PRINT@80,A;EJ;:RR=0:KK=0:ONKE
YGOSUB140,141,141,94,126,,141,139:KEYON:
FL=-1
85 G=INKEY$:IFRSTHEN139
86 G=INKEY$:IFRRTHENNM=NM-1:GOTO83
87 G=INKEY$:IFKKTHEN80ELSE85
88 IFNM=0THENPRINT@40,DT" not found in "
DF" file"EJ;ELSEPRINT@80,USING"#### entr
ies found";NM;:PRINTEJ
89 IFND>0THENPRINTUSING"#### entries del
eted";ND
90 PRINT@600,ET;L3;
91 ONKEYGOSUB141,141,141,141,126,141,141
,139:KEYON:FL=0
92 G=INKEY$:IFRSTHEN139ELSEIFRRTHEN74ELS
E92
93 GOTO139
94 KEYSTOP:IFNOTFLTHENKEYON:RETURNELSEFL
=0
95 PRINTEU;:PRINT@295,ET;VI;"Chg";VO;
96 ONKEYGOSUB141,141,141,141,141,141,141
,139
97 PRINT@600,ET;L4;
98 PRINT@80,EP;:LI=STRING$(255,0):MID$(L
I,1,LEN(A))=A:I=1:IFFATHEN112
99 KEYON:IFRSTHEN123
100 CH=INKEY$:IFLEN(CH)=0THEN99
101 KEYSTOP:X=ASC(CH):ONINSTR(AR,CH)+1GO
TO102,108,108,110,102,102,111,112,102,10
2,111,112,102,102,107
102 IFX=13THEN115
103 IFX=9THENMID$(LI,I,1)=CH:I=I+1:GOTO1
14
104 IFX=27THEN113
105 IFX<32ORX>126THENBEEPELSETC=MID$(LI,
I,1):MID$(LI,I,1)=CH:I=I+1:IFTC=CHR$(9)T
HEN114ELSEPRINTCH;
106 GOTO99
107 MID$(LI,I,255-I)=MID$(LI,I+1)+CHR$(0
):GOTO114
108 IFI=1THEN99ELSEI=I-1
109 X=ASC(MID$(LI,I,1)):IFX<32ORX>126THE
N114ELSEPRINTCHR$(8);:GOTO99
110 CH=MID$(LI,I,1):GOTO101
111 I=1:GOTO114
112 I=INSTR(LI,CHR$(0)):GOTO114
113 MID$(LI,I,255-I)=" "+MID$(LI,I,255-I
)
114 PRINT@80,EQ;MID$(LI,1,I-1);:PB=CSRLI
N*40+POS(0):PRINTMID$(LI,I)EJ;:PRINT@PB,
EP;:GOTO99
115 PRINTEQ;:I=INSTR(LI,CHR$(0))-1
116 IFI<1THENI=255ELSEIFI=0THEN123
117 LI=LEFT$(LI,I):IFFATHEN127
118 CLOSE:OPEN"TP"FOROUTPUTAS2
119 OPENDFFORINPUTAS1:N=0
120 IFEOF(1)THEN122ELSELINEINPUT#1,L:N=N

```

finished (because the Node remains solid as a rock through everything—cold, warm, any kind of start). The way around this incompatibility is simple, I discovered: remove all but the original memory module (bank 1) of the 200. The conflict is caused by competing attempts to access the alternate LCD buffer, related to bank switching. I'm not expert enough to describe the problem in detail, nor have I found anyone yet who can. But I have found that the cold-start problems disappear when the memory chips for the other two banks are removed.

Also observe this other caution when you take this route to enhancing the 200. Machine-language programs (files that end with .CO) mess up access to the Node Datapac unless you take a precaution. The best way to handle machine programs is to keep them stored in the Node, bring them into the working RAM bank (number 1), run them, and then kill them from working RAM. You can do this automatically from a BASIC program by using the calls supplied by Node. (See the good article about the technical side of the Node Datapac by William Sarjeant, *PICO* magazine, October '87, p. 22.)

As an example of how to run programs from the Node, I list here my customized calendar-appointment program, *TIME.BA* (see Listing 1). *TIME.BA* uses *SORT.CO*. (See Listing 2 for *SORT.BA*, which creates *SORT.CO*.) When you press F7 in the *TIME* program, the computer sorts the current *TASK.DO* file

You can also store another battery pack on the back of the computer.

according to date; it appends all dates prior to the current date to a second file called *DIARY.DO*. *DIARY* allows me to comment extensively on the previous day's list of things to do. *DIARY* provides a handy record for future reference and reflections. *TIME* sorts by loading *SORT.CO*, running it on *TASK*, then killing *SORT*. *TIME* downloads and then uploads the *TASK* and *DIARY* files from and to the Node Datapac. But not to worry. There is no lag in running the programs this way. It just prevents compatibility conflicts and cold starts.

HURRAH FOR VELCRO

As I mentioned, the addition of the Node and Safe housings makes the 200 a balanced and solid machine in your hands. What really brings out the advantage of these housings is the installation of the A.R.M.S. NiCd battery packs. Using Velcro hook-and-loop strips, you can put one battery pack underneath the computer, lodging it against the bottom of the Node and the bottom of the 200. (I also cover the entire metal housing of the Node with Velcro cloth just to make it smooth and comfortable on the naked knees.) You can also store another battery pack on the back of the computer, using Velcro and some plugs to give the pack extra support. (I keep a Cannon RS-232 plastic plug in one port, a sawed-off phone cable jack in the other.) To the Velcro

T200 PROGRAMMING

```

+1:IFNE=NTHENL=LI:LI=STRING$(255,0)
121 PRINT#2,L:GOTO120
122 CLOSE:KILL"TASK.DO":NAME"TP.DO"AS"TA
SK.DO"
123 CLOSE:OPENDFFORINPUTAS1
124 PRINTEQ;:FORX=1TONE:LINEINPUT#1,A:NE
XTX
125 FA=0:RR=-1:RS=0:RETURN
126 KEYSTOP:PRINT@40,EJ;EU;:PRINT@300,VI
"Add"VO;:FA=-1:A=DT:FL=FA:PRINT@80,EJ;A;
:GOTO96
127 CLOSE:OPENDFFORAPPENDAS1
128 PRINT#1,LI:CLOSE:FA=0
129 GOTO123
139 PRINTEU;:PRINT@315,ET;VI"Exit"VO;:RS
=-1:GOTO141
140 PRINTEU;:PRINT@280,ET;VI;LEFT$(L2,4)
VO;:PRINT@80,EJ;:KK=-1
141 RETURN
142 REM
143 RS=-1:RETURN
144 REM
145 RS=-1:RETURN
146 PRINTEU;:PRINT@295,ET;VI"Prev";VO;
147 DZ=1:M=M-1:IFM<1THENM=12:YY=YY-1
148 RS=-1:RETURN
149 PRINTEU;:PRINT@300,ET;VI"Next";VO;
150 M=M+1:DZ=1:IFM>12THENM=1:YY=YY+1
151 RS=-1:RETURN
152 REM
153 RS=-1:RETURN
154 REM
155 PRINTVO;EQ:CLEAR256,60901:FX$="SORT.
CO":CALL61162,13,VARPTR(FX$):CALL61162,2
3,VARPTR(FX$)
156 LOADM"SORT":DEFINTJ:A$="TASK"
157 FORA=1TOLEN(A$)
158 POKE61295+A,ASC(MID$(A$,A)):NEXT
159 POKE61295+A,0
160 CLS:J=0:CALLHIMEM+5,0,VARPTR(J)
161 CLOSE:CLEAR1000,HIMEM:MAXFILES=3
162 OPEN"TASK"FORINPUTAS1:OPEN"NEW"FOROU
TPUTAS2:OPEN"DIARY"FORAPPENDAS3
163 IFEOF(1)THEN165ELSELINEINPUT#1,A$
164 IF(LEFT$(A$,2)=LEFT$(DATE$,2)ANDMID$
(A$,4,2)<MID$(DATE$,4,2))OR(LEFT$(A$,2)<
LEFT$(DATE$,2))THENPRINT#3,:PRINT#3,A$:G
OTO163:ELSEPRINT#2,A$:GOTO163
165 CLOSE:KILL"TASK.DO":NAME"NEW.DO"AS"
TASK.DO":KILL"TASK.CO"
166 CLOSE:UT$="TASK.DO":CALL61162,13,VAR
PTR(UT$):CALL61162,24,VARPTR(UT$):KILLUT
$
168 DD$="DIARY.DO":CALL61162,13,VARPTR(D
D$):CALL61162,24,VARPTR(DD$):KILLDD$
170 PRINTVO;EQ:CLEAR256,MAXRAM:{MENU

```

End of listing.

underneath the 200, you can attach other useful stuff, like a felt-tip pen, red marker, and a yellow underliner. You can then edit printouts, and the writing machine becomes self-contained.

Loaded with two solid battery packs, the 200 is on the go for twenty-two hours straight, and with an extra third pack around, you can rotate them as they get recharged (takes eight hours for one to recharge while you use the others). This way, you're never out of power and never need to fumble with batteries. The added

```

1 CLEAR256,MAXRAM:READP:CLEAR256,P:READP
,Q,R,A$:C=P+Q+R
2 PRINT"Working..."
3 FORJ=PTOQ:READX:C=C+X:POKEJ,X:NEXT:REA
DZ
4 IFC<>ZTHENSOUND9394,9:PRINT"Checksum i
s wrong":END
5 SAVEMAS,P,Q,R
10 DATA60902,61103,0,"sort"
11 DATA46,68,79,0,54,1,34,170,238,33,112
,239,229,43,35,205
12 DATA19,16,119,254,46,202,2,238,183,19
4,244,237,17,230,237,6
13 DATA4,205,186,65,209,62,10,205,79,110
,200,205,140,110,34,172
14 DATA238,42,170,238,54,0,175,50,169,23
8,42,172,238,229,205,126
15 DATA238,34,174,238,225,235,72,42,174,
238,229,205,126,238,34,174
16 DATA238,225,120,183,202,76,238,197,21
3,229,205,113,238,225,209,193
17 DATA220,84,238,195,43,238,58,169,238,
183,194,28,238,201,197,229
18 DATA17,112,239,205,167,50,209,235,12,
205,96,60,17,112,239,193
19 DATA4,205,189,65,65,62,255,50,169,238
,201,235,26,190,192,19
20 DATA5,200,35,13,194,114,238,201,6,0,1
26,254,26,200,35,4
21 DATA202,149,238,254,13,194,128,238,12
6,254,10,192,35,4,192,205
22 DATA77,79,209,225,6,100,126,231,35,5,
194,156,238,42,170,238
23 DATA54,2,201,0,0,0,0,0,0,149556
200 CLEAR600:DEFINTI-Q:DEFSTRX-Z:E=62122
:Y="$$$$$"+"CO":A=E
270 GOSUB400:IFQTHEN500
280 FORJ=1TO8:K=ASC(MID$(Y,J)):IFK>96THE
NK=K-32
290 IFK=36ORK=PEEK(A+J+2)THENNEXT:IFMTHE
NPOKEA,(PEEK(A)AND247)ELSE
POKEA,(PEEK(A)OR8)
300 GOTO270
400 A=A+11:IFA>62628THENQ=1:RETURNELSEIF
PEEK(A)<128THEN400ELSEQ=0:RETURN:
IFQTHENRETURN
500 Q$=CHR$(34):C$=CHR$(13):A$="NEW"+CHR
$(13)+"kill"+Q$+"sort.ba"+C$+"menu"+C$
507 FORI=1TOLEN(A$):POKE2*I+64797,ASC(MI
D$(A$,I)):POKE2*I+64798,0:NEXT
508 FORI=1TOLEN(A$):POKE2*I+64797,ASC(MI
D$(A$,I)):POKE2*I+64798,0:NEXT
509 BEEP:POKE64798,I-1

```

End of listing.

Listing 2. BASIC program SORT.BA, which loads SORT.CO, a rapid machine-language sorter. With TIME.BA, SORT illustrates the way .CO files should be handled with the Node Datapac installed.

weight is negligible. The 200 consumes little power compared to energy-guzzlers with their back-lit displays and external disk drives. The Node and Safe have their own internal 5-year, watch-size batteries.

I keep a Duracell "Flip" pocket light, also fastened with Velcro, underneath the 200. It's handy for computing in the dark and improves LCD legibility wherever the light is not good. The flip light works great if you stand it up with a sliver of Velcro next


```

1 CLEAR256,HIMEM:PRINT:PRINT"axtsd;";:F$
=INPUT$(1)
2 IFF$=CHR$(13) THENMENU
4 IFF$=";" THENINPUT"Load";N$:GOTO18
6 IFF$="a" THENX=1:GOTO22
8 IFF$="x" THENX=0:GOTO22
10 IFF$="t" THENU$="TMPC.BA":GOTO20
12 IFF$="s" THENU$="STORE.BA":GOTO20
16 IFF$="d" THENCLEAR0,53853:N$="DSKMGR.C
0":GOTO18
18 CALL61162,13,VARPTR(N$):CALL61162,23,
VARPTR(N$):RUN
20 CALL61162,22,VARPTR(U$)
22 CALL39703:POKE63560,0:FORA=63408TO634
08+33:READB:POKEA,B:NEXTA:CALL63408,0,X*
256
24 DATA243,219,216,230,12,246,2,211,216,
126,126,126,44,126,33,0,0,126,167,62,2,1
94,0,0,219,216,230,12,211,216,205,69,79,
199

```

End of listing.

The options of MENU.BA are as follows:

- a= access Node
- x= access Super ROM
- t= run the TIME program
- s= run the STORE program
- semicolon= prompt for a filename to be loaded from the Node to main RAM
- d= load DSKMGR.CO from Node for operating the TTD.

Listing 3. Program MENU.BA, which stays in main RAM of the Tandy 200 and operates as a shuttle for up and downloading files from the Node Datapac. It also switches between Node and Super ROM.

to the TAB and CTRL keys on the left side of the 200. This is the 200's low-cost answer to the backlit, supertwist LCD screens. And it doesn't drain the computer's battery power. O mother of invention!

RUNNING THE RAM DISK

You can also streamline file shuttling between the Node and RAM. I've made a little program to do most of the operations from main RAM. It's called—ta-da!—MENU.BA (see Listing 3). With it, you can do most operations with a single key, from switching between Super and Node access, to loading DSKMGR.CO, the public-domain Tandy Disk Drive manager. After using Super ROM, you have to remember to go through MENU.BA first before trying to access Node. All you do is put the cursor over MENU, press RETURN, and press a. You're back in Node and can run from there.

Writing and editing from the Node menu itself has extra features. It gives you an overwrite/insert option as well as word count and search-and-replace. Super gives you mapping before printing and hundreds of other features. If your printer needs a linefeed, you can get this feature from Super ROM's WRITE.

Storing files to Node can also be completely automated, as I've done with the listing STORE.BA (see Listing 4). Just put the cursor over the program STORE in the Node and every .DO, .CA, and .CT file is saved (the last two extensions are for files created by Super). It's important to remember that you cannot edit files from Node without a corresponding amount of bytes available in main RAM. If you don't have enough room in RAM, Node returns you to its own menu. When moving files from the IBM to the 200, I use the IBMSIG (CompuServe) public-domain program CHOP and give it parameters to put my large file into 10-15K chunks. This is the only minor price to pay for the major

```

1 CLS:ONERRORGOTO30:PRINT@560,"Storing..
":PRINT:FORA=62034TO62474STEP11:F$(N)="
":FORJ=1TO8
3 IFCHR$(PEEK(A+J+2))<>" " THENF$(N)=F$(N
)+CHR$(PEEK(A+J+2))
8 IFJ=6 THENF$(N)=F$(N)+". "
9 NEXTJ
10 IFPEEK(A)=192ORPEEK(A)=160 THEN15 ELSEN
EXT
15 IFRIGHT$(F$(N),2)="DO"ORRIGHT$(F$(N),
2)="CT"ORRIGHT$(F$(N),2)="CA" THENPRINTF$
(N):CALL61162,13,VARPTR(F$(N)):CALL61162
,24,VARPTR(F$(N))
16 'If you want files in main RAM to be
killed automatically after storing, just
add ":KILL (F$(N))" to t end of line 15
20 NEXT
30 CLEAR256,HIMEM:{MENU

```

End of listing.

Listing 4. STORE.BA stores all application files from main RAM into the Node Datapac.

conveniences of the 200. A great file transfer program between the 200 and the IBM was written by Phil Wheeler and you can find it under the name FT.COM on the M100 Forum on CompuServe.

Once it's set up properly and unleashed, forget about Toshiba and NEC. Once tamed, the 200 is a portable powerhouse, a writer's dream.



Michael Heim has a doctorate in philosophy and is the author of Electric Language: A Philosophical Study of Word Processing (Yale University Press, 1987). His articles on the impact of computer software have appeared nationally.

Editor's note: We were unable to test these programs.

-MN

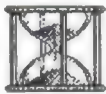
Vendors Mentioned:

A.R.M.S.
5845 Live Oak Parkway
Suite C
Norcross, GA 30093
(804)794-6675

PCSG
11035 Harry Hines Blvd., #206
Dallas, Texas 75229
(214)351-0564

PG Design
37560 31 Mile High Road
Richmond, Michigan 48062
(313)727-2744

Node Systems, Inc.
1300 East Main Street
Grass Valley, California 95945



A Watchdog for Your NiCd's

Battery Watch gauges battery discharge—and more.

by Stephen R. Lankton



Tandy 1400LT owners (and other MS-DOS laptopers who use NiCd power) ought to consider buying this new product from Traveling Software (TS). *Battery Watch* is RAM-resident software that monitors the use of the CPU and peripherals and alerts you if you have a low battery, before it gets dangerously low. It automatically sounds an alarm at a user-determined time; plus it offers an ever-ready visual display of the battery's charge at the press of a hot key. What's more, it allows for a total discharge of the battery before you recharge it. As I see it, any of these services merits the use of *Battery Watch*.

WHY BATTERY WATCH?

If you have a Tandy 1400LT, you already have a low battery warning light (labeled *LOW BAT*) telling you when you should recharge. Why do you need another product to do the same thing? For one, the low battery light presents an all-or-nothing decision. But with *Battery Watch* (BW) you can know, before you travel, the status of the battery charge. In other words, if you have used the battery for 2 hours or so, BW lets you know that you have, say, 1.4 hours of charge remaining.

Also, if you don't discharge your NiCd batteries fully before recharging, you will severely diminish their lives and forever reduce the use/recharge cycle while the batteries are living. In the past, since I'd rather be safe than sorry when I travel, I have erred in the direction of frequent recharges. Over the years, this habit has cost me two replacement batteries in my VCR and one in my Chipmunk portable drive. Part of my motivation for buying BW was the memory of how I goofed up those previous batteries.

The rest was the sad realization that when the *LOWBAT* light came on while I was using my new hard drive, it was too late to save the data I was working on. I had to save it *before* the low battery triggered the LED, or my battery would be too low to save a document properly.

DOES IT DO THE JOB?

So the question became, "Does *Battery Watch* do the job it is advertised to do?" I had to find out.

The BW manual lists supported computers as follows: Amstrad 512, 640; Datavue Spark, Epson LCD, backlit, and HD; GRiDLite Plus; IBM Convertible; NEC MultiSpeed, EL, and HD; Sharp 4501, 4502, 4521; Tandy 1400LT; Toshiba T1000, 1100+, T1200F, H, and backlit; Zenith 181, 183, SupersPort and SupersPort 286.

Absent from the list is a version for the Tandy 1400LT *with hard drive*. Many people, like me, have ordered and installed the drive via third party sources. Being unfamiliar with BW, I ordered it, not realizing that I needed a special version—one not yet written. Afterwards, frequent calls to TS resulted in false hopes about its becoming available, partly because Tandy had not released its hard drive unit yet.

BW comes in a colorful red-white-blue package with a 3.5-inch floppy (with multicolored label) and a 26-page manual on installation and use. That is, it looks first rate and has the feel of a well-made product of which the manufacturer must be proud.

INSTALLATION

A look at the BW disk directory reveals that installation uses two programs totaling about 27K, and the subdirectory *INST* contains 26 versions of the BW program at roughly 17.5K each. *INSTALL.EXE*, the installation program, selects one of these versions for you, places it on your floppy disk, and inserts a call for it into your *AUTOEXEC.BAT* file if you want the program to run on boot-up. After making a copy of the BW disk (the original could get damaged), you type *A:install* (or *B:install* in a 2-floppy system). Answer a prompt for the directory or path name where you want BW installed (in my case, *C:* for the hard drive), and another for whether you want BW called from your *AUTOEXEC.BAT* file. Finally, select your computer type from a window listing the supported computers, and it promptly copies BW to the designated drive, completing the installation.

USING BATTERY WATCH

Typing BW loads it into memory (as does rebooting, if you opted to have *AUTOEXEC.BAT* modified), where it takes up about 10-12K of RAM. The command *BW UN* unloads it from memory should you desire.

At any time, pressing the hot key *SHIFT-ALT-B* brings up the main BW window, which displays the battery level on a horizontal bar graph (like a gasoline gauge might display your automobile fuel level) and a digital readout of how many hours and minutes remain. If you have just charged the battery, you can reset the gauge to *FULL*. From this screen you can exit (*ESC*), get help (*F1*), and reach the utilities (*F3*).

The utilities consist of three options: *Deep Discharge* (*F4*), *Status* (*F5*), and *Battery Set* (*F6*).

Deep Discharge helps prolong NiCd battery life. The so-called "memory" on all NiCd's dictates that you fully discharge

it before recharging. This can be a bit of a hassle, especially with the Tandy laptop, since it goes into "standby" mode—nearly turning itself off—to reduce discharge when left running. This is where *Deep Discharge* comes to the rescue. Initiate this feature, and BW fully drains the battery to the lowest appropriate level and terminates by shutting the machine off. This is best done overnight. Following that, you merely recharge the battery as described in your user manual. A purchaser may be well advised to do three charge/deep discharge cycles in rapid succession to ensure the rejuvenation of a battery that has learned to give less than it should.

Status reveals more technical data on the percentage of use for each component connected to the machine. To understand this, users need to know that BW actually monitors access to each of the hardware addresses for each component installed. So if the hard drive controller board uses 0.62W (watts) when the drive is idle and 1.25W when accessed, and the hard drive itself uses 4.6W when it reads or writes and 4.58W when idle (as the CMS hard drive does), then BW subtracts these amounts during the times when the drive is used. On the other hand, when the drive controller is idle, the 0.62W power consumption must be subtracted continually when the machine is on. Conversely, the modem and the floppy disks drain power only when they are accessed and used. So BW stays RAM-resident and "listens" for calls to the addresses used to access components, and then it subtracts exactly the right power consumption, depending on the exact use of the machine. For your information, the *Status* window tells you what percentage of use and power went to each component installed.

Finally, the *Battery Set* window lets you make minuscule adjustments in your battery power gauge reading, according to your personal estimate of battery power level after using the power adapter. Owners of the IBM, NEC HD, Sharp, and Zenith 286 laptops do not have to estimate, since BW gauges the charge gained when you use their adapters.

Command line "switches" let you customize BW when you run or boot it. You may use special settings for loading BW with hardware options. Users need type only BW for most applications, but anyone who has a non-factory modem or an enhanced (or aged) computer needs to adjust the program. To adjust it, find the specs for the product you have added (say, a modem) and then type BWMO=94 (94 milliamperes is the power consumption for the Holmes d-2400 modem on the Datavue laptop, according to a chart for some products, included in the BW manual).

Tandy 1400LT hard drive users will find that BW, at this point, does not support them. Yet you can get by until a version is made for us. Use the SY= switch and estimate your percent of read/writes to the hard disk in the "system" information switch. I use an estimate of 533 milliamps, so I type BW SY=533 AL=10. You can re-estimate this 533-milliamp figure over a period of days until you find the right one. After that, BW will be much handier. But without that customization, BW makes a poor estimate, and you might as well keep track of how long you have been working and estimate mentally.

You can set the alarm to go off at any pre-drain time with the AL= switch. In the above example, notice my setting of 10 minutes.

You can change the SHIFT-ALT-B hot key combination that calls the BW window to any other key combination.

There are other software switches available for floppy drives, back lights, and more. But again, most users should not have to bother with these choices.

BW1, BUGS 0

So far, no bugs have popped up. I keep CED, a public-domain

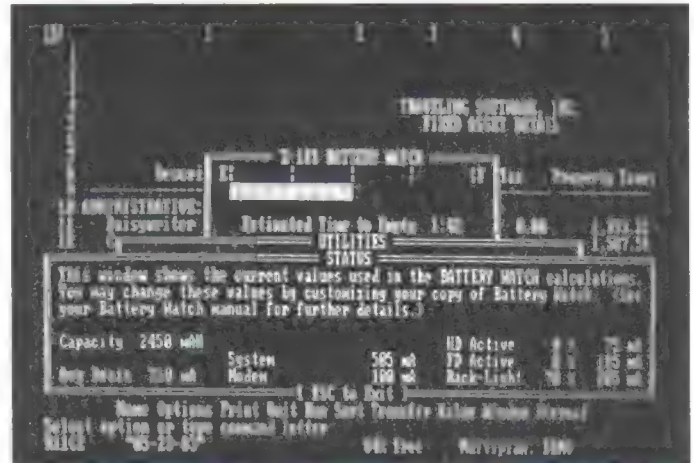


Photo 1. Battery Watch Status screen, showing the constants used in the program's power calculations so it can tell you how much time you have left on your computer's battery.

line editor, resident in RAM, which interferes with nothing on my desktop or laptop, and BW seems to interact well. The current version has caused no problems with Word 3.1, WordPerfect 4.2, Lotus 2.0, Quattro, Reflex, Telecommuter, TapCIS, or any other program I have tried it with.

However, the BW window will not come up when Windows 2.03 is operating. TS customer support says that they didn't know that but will look into it.

The manual is very complete and, since the product works as advertised, a review of BW is like *Cliff's Notes* for the manual.

Traveling Software has long been a reliable company with leading products for portable computers. I have dealt with them for four or five years and found that, unlike others, TS releases software and hardware only after it has been tested at beta test locations. They offer telephone support, product refunds, and courteous service.

TS hopes to have a version for the Tandy hard drive some day. Until then, BW is useful for all the computers it supports, including the Tandy 1400LT with hard drive with the customization stated above. In all cases, the *Deep Discharge* feature alone almost justifies the \$40 price tag.

Stephen Lankton, assistant professor at the University of West Florida, is an author of eleven professional books in psychology.

Editor's note: When the BW alarm goes off while you're running Word version 3.0 in the graphics mode (the default, without the /c option), the screen appears scrambled behind the BW window. But after you press ESC to remove the BW window, pressing ESC again restores the Word screen.

MANUFACTURER'S SPECIFICATIONS

Battery Watch version 1.0F—\$39.95

System tested on:

Tandy 1400LT, with 20M CMS hard drive and 1200-baud modem

Traveling Software

19310 North Creek Parkway

Bothell, WA 98011

(800)343-8080

(206)483-8088

Calling *TEXT* from *BASIC*

Here's how to make it a round trip.

by Mo Budlong

One of the great advantages of the Model 100/102 over other computers is its integration. *TEXT* and *BASIC* can load or save using the modem or RS-232 line. *TELCOM* can use the address file of *ADDRSS* to locate phone numbers and dial them. The *ADDRSS* program uses the "Find" function of the *TEXT* program to locate addresses.

However, one area of "missing" integration is between *BASIC* and *TEXT*. Why not be able to drop into *TEXT* from a *BASIC* program, edit a file, and then return to *BASIC*?

TEXT is not very friendly to programmers. It does things to the stack, destroying all record of where you were so that you can't get back, and if approached from the wrong entry point it always jumps to the Model 100/102 menu on exit.

You can get into *TEXT* from *BASIC* by *CALLing* 24046, the entry address to the *TEXT* program, but you will not return to your *BASIC* program. This entry point always causes an exit to the main menu when you're done editing. To get into *TEXT* and back to *BASIC* you have to find another door into the *TEXT* program.

To get into *TEXT* and back to *BASIC* you have to find another door into *TEXT*.

Listing 1 is a few lines from the initialization code of *TEXT* at address 5F65H. After *TEXT* decides the name of the file to be edited, it jumps to the code of Listing 1. On entry, *HL* contains the address of the first character in the file. The last line of Listing 1 at 5F74H saves the value 5797H at the address F765H. It becomes apparent later in the logic for *TEXT* that when you press F8 to exit from *TEXT*, the program recovers the address saved at F765H and jumps to it. Since 5797H is the address of *MENU*, of course, *TEXT* always returns to the menu on exit. So the trick is to load *HL* with the address that you want to return to, and then jump into *TEXT* at 5F71H.

You have three other problems to resolve before you can proceed. Two are fairly simple. To enter *TEXT* at 5F71H, the *A* register must contain the value 1 because you have skipped that instruction at 5F6CH. Also, the address of the first character of the text file to edit must be on the stack to stand in for the instruction at 5F65H, which pushes *HL* containing that address.

The third problem is shown in Listing 2. This routine is

```
;Code that destroys the stack executed by TEXT.
;This code is part of a routine at 5D53H that is called by
;TEXT after every key stroke is executed.
```

```
5D5D POP    B           ;RETurn to TEXT into B
5D5E LHL    FB9DH       ;Load Top of stack to HL
5D61 SPHL                   ;Set Stack pointer to top of stack
5D62 PUSH   B           ;Restore RETurn to TEXT
5D63 RET                      ;And back to TEXT
```

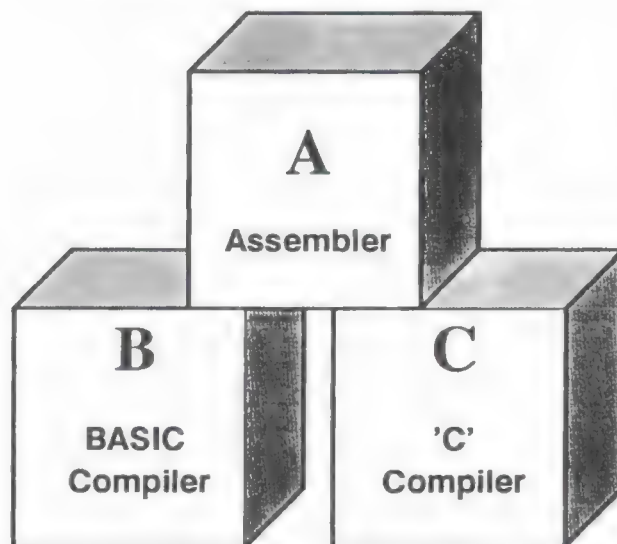
Listing 2. The *TEXT* code that routinely gets rid of addresses telling where you want it to go on exit. The author shows how to get around this problem also.

```
;Commented Portion of the Initialization code for TEXT.
This code is executed after the Code at 24046
(5DEEH) has decided the name of the file to be
edited either because the cursor was positioned over
the file name, or the user typed in something in
response to the "File to Edit?" prompt. On entry to
this piece of code the HL register points to the first
character of the file to be edited.
```

```
5F65 PUSH   H           ;Save start of the file to edit
5F66 LXI    H,0          ;Set offset from file start at 0
5F69 SHLD   F6E7H        ;Save the offset
5F6C MVI    A,1          ;1 for TEXT, 0 for EDITing
                           BASIC file.
5F6E LXI    H,5797H      ;Address of MENU routine
5F71 STA    F921H        ;Save TEXT or EDIT type
5F74 SHLD   F765H        ;Save MENU Address for exit.
                           ;When F8 is pressed (or ESC
                           ESC) TEXT
                           jumps to the address saved at
                           F765H.
```

Listing 1. A few lines from the initialization code of *TEXT*. Here *TEXT* is configured to go to the Model 100's main menu on exit. But to go back to *BASIC*, author Budlong shows how to skip this, telling *TEXT* to go back to *BASIC*.

OPTION ROM DEVELOPMENT FOR THE MODEL 100/102 IS AS EASY AS ...



These Cross Development Packages for the Model 100/102 that run on a PC or Clone will make your development project a breeze, whether you work at machine level in Assembler, produce fast maintainable code in 'C' or just want to get your BASIC program to run from an Option ROM.

ASM 100

Package includes a Cross Assembler and linker for the Model 100/102 that allows you to create a .CO or ROMable program.

The Option ROM Library makes it possible to write and test code as .CO files and then burn the final product into an Option ROM. Manual contains detailed information on the Model 100/102 option ROM technology.

\$395.00

RBASIC

A Basic to ROM Compiler that allows your BASIC programs to be converted so that they can be run directly out of an option ROM.

At last a simple and inexpensive solution to putting your BASIC program onto a ROM.

\$149.95

C100

The 'C' Cross Development System is a portable, easily maintainable compromise between the slowness of BASIC and the complexity of Assembler. Complete libraries provide Telcom, Graphics, screen control and random record access.

\$695.00

The Secrets of ROM Revealed

Concise, easy to understand manual covers in detail, previously undocumented Option ROM features of the Model 100/102. Includes listings of everything you need to call standard ROM routines from an Option ROM. IBM Diskette containing source code of key routines and a search & replace utility for text files.

\$39.95, Diskette \$10.00

Eproms, Boards, and Eprom Burners available.
Please send check with order or we can ship COD.
California residents add 6.5% sales tax.
\$3.50 shipping per item inside the US.
Rush shipping and handling charge \$15.00

King Computer Services, Inc.

1016 North New Hampshire, Los Angeles, CA 90029. (213) 661-2063

*CALL*ed after every keystroke while *TEXT* is running. The stack pointer is reinitialized to the value stored at FB9DH. This value is a pointer to the top of the stack, so the routine is a quick way to clean up any litter left on the stack. The problem is that some of the litter that *TEXT* cleans up includes your route home. Any return addresses placed on the stack, including the next line to execute in *BASIC*, are swept away here. The way around this problem is to put a dummy value into FB9DH temporarily to protect your return addresses.

With this knowledge, it is possible to attack these three problems. The approach I have used is to ensure that the text file exists by opening it in *APPEND* mode in *BASIC*. If a file does not exist, *APPEND* mode will create it. If the file does exist, *APPEND* mode does nothing and leaves the file unchanged. The file is then closed, and the routine is called, passing in a *VARPTR* to the file name.

Listing 3 provides an example of the calling sequence when the *TXTCAL* routine has been set up in memory at 62750.

Listing 4 is the assembly language code for *TXTCAL.ASM*. It has only one line of code that is position dependent and can otherwise be loaded and run at any address. Since the only position-dependent data is the address of the exit of the routine, it is easy to code a loader within a *BASIC* program that will place this routine anywhere you want it. More about the loader in just a moment.

The entry to *TXTCAL* is executed as in line 170 of Listing 3 by passing a *VARPTR*, a pointer to the file name, to the routine in the *HL* register.

The whole routine is 66 bytes long.

An entry in the variable table for a string has this layout.

Byte 1	Value 3 for a string.
Bytes 2 and 3	Variable name <i>FN</i> .
Byte 4	Length of the string.
Bytes 5 and 6	Address of the string.

When a *VARPTR* function is performed on a string variable, it returns the address of Byte 4, the length byte. This example would print the value 5, the length of the string *X\$*.

```
10 X$="HELLO"
20 A=VARPTR(X$)
30 PRINT PEEK(A)
```

In Listing 4, the first action is to save all registers. The length of the file name and the pointer to the file name are extracted from the variable table. Two Model 100/102 routines are used to locate the directory entry for the file. If it cannot find the file, *TXTCAL* exits; otherwise it uses the directory entry to establish the beginning address of the file. This solves one of the three problems, since you now have the start of the file.

Beginning at *SAVESTACK* in Listing 4 is a mixture of the logic that imitates what the Model 100/102 does in Listing 1 and the logic that handles the special setup needed to enter *TEXT*.

Here are the steps:

- Save the value stored at FB9DH by pushing it on the stack.

```
100 REM **** CLEAR HIMEM AND LOAD THE ROUTINE
110 CLEAR 100,62750
120 GOSUB 300
130 REM SAMPLE BASIC CALL TO THE EDITOR
140 FN$="HELLO.DO"
150 OPEN FN$ FOR APPEND AS 1
160 CLOSE 1
170 CALL TX,,VARPTR(FN$)
180 PRINT "BACK IN BASIC HERE"
190 END
300 REM **** SET TX AS ENTRY ADDRESS
310 REM **** LOAD ROUTINE AT TX FOR 78 BYTES
320 TX = 62750 'TX MUST BE >= HIMEM
330 FOR A = TX TO TX+65
340 READ N:POKE A,N:NEXT A
350 REM D=INT((TX+48)/256):C=(TX+47)-(256*D):POKE TX+42,C:POKE TX+43,D
360 RETURN
370 DATA 229,213,197,245,126,35,94,35,86,235
380 DATA 95,205,11,76,205,175,32,202,237,20
390 DATA 35,94,35,86,42,157,251,229,33,0
400 DATA 0,34,231,246,57,34,157,251,213,62
410 DATA 1,33,77,245,195,113,95,225,225,34
420 DATA 157,251,205,156,108,175,50,80,246,61
430 DATA 50,173,250,195,237,20
```

Listing 3. A sample *BASIC* program that shows how you would call the machine-language program that lets you return to *BASIC* after using *TEXT*.

- Set to zero the value of the offset into the file to be edited.
- Get the current value of the stack pointer and save it at FB9DH.
- Place 1 in the *A* register.
- Push the address of the start of the file onto the stack.
- Load *HL* with an address to be used as the return when an exit is taken from *TEXT*.

The routine then jumps into *TEXT*, and on exit returns to the routine marked *EXIT*: in the listing.

The *EXIT* routine takes care of some housekeeping by clearing an extra *PUSH* left on the stack by *TEXT*, restoring the original value to FB9DH, restoring the *BASIC* function key table, and re-enabling standard function-key handling. The routine jumps to an exit in the main system that *POPs* all registers in reverse of the order they were *PUSH*ed and returns to the next line of *BASIC*.

The whole routine is 66 bytes long. The version I have provided is set up to run at address 62750. Only the address of *EXIT* is position dependent.

Listing 5 is a *BASIC* listing that loads the routine and then calls it to edit a file. After all the data values are read and poked, the extra line of code at line 350 takes care of the one changeable address. The variable *TX* is set to the point that you want to use for entry into the routine. If you want it somewhere else, change the value on line 320. The routine is small enough that *TX* could be set as high as 62890 without causing trouble.



TXTCAL.ASM

A routine to allow the Model 100/102 TEXT editor to be called from within BASIC. The routine RETURNS to BASIC when the user exits from TEXT.
See article for description of how to use it.

Model 100/102 routines in this code are

POPALL: EQU 014EDH ;POPs all registers and does a RETURN
PRSNAM: EQU 04C0BH ;Parses a file name "FILE.DO" pointed to by HL into FC93H system file name area. On entry, the length of the file name must be in register E.
FNDFIL: EQU 020AFH ;Search directory for file named at FC93H on exit HL points to directory or Z is set if file not found.
BK2SK: EQU 06C9CH ;Copies the BASIC function key table to the system function key table. Used to restore BASIC table on exit.
TXTENT: EQU 05F71H ;An entry into the TEXT editor in the middle of the INIT routines.
Model 100/102 addresses in this code are
FILOFF: EQU 0F6E7H ;Offset from the beginning of the TEXT file currently being EDITed so that the editor screen routine knows where to position itself.
STKTOP: EQU 0FB9DH ;Holds the beginning address of the stack. TEXT clears the stack by setting it to the value held in FB9DH. To preserve the stack this must be saved and a new dummy value inserted.
FKCTRL: EQU 0F650H ;Holds 0 or 80H. When set to 0, F1-F8 return the string associated with that key in the system key table. When set to 80 (which the editor INIT code does) F1-F8 skip the first 4 characters of the string in the table and return whatever is left. Must be reset to 0 on exit from the editor.

LBENBL: EQU 0FAADH ;Set to FFH to enable the label line. Must be enabled on exit.

ORG 62750
START: PUSH H ;Save all registers on entry
PUSH D ;in opposite order to POPALL
PUSH B ;routine
PUSH PSW
MOV A,M ;H points to string length in VAR table
INX H ;Move up to pointer to string
MOV E,M ;Grab pointer to string into DE
INX H ;DE
MOV D,M
XCHG ;Pointer to string into HL
MOV E,A ;Length into E
CALL PRSNAM ;Filename into FC93H
CALL FNDFIL ;Locate directory entry for file at FC93H
JZ POPALL ;Quit if not found
INX H ;Move to pointer to file start
MOV E,M ;Start of file into DE
INX H
MOV D,M
SAVSTACK:
LHLD STKTOP ;Save the stack top
PUSH H ;On the stack
LXI H,0 ;Offset to start of
SHLD FILOFF ;file to EDIT is saved here
NEWSTACK:
DAD SP ;Get stack pointer
SHLD STKTOP ;Save it at stack top pointer
PUSH D ;File start on stack for TEXT
MVI A,1 ;A=1 standard EDIT, A=0 BASIC EDIT
SETEXIT:
LXI H,EXIT ;Return from the editor
JMP TXTENT ;Jump to the editor
EXIT: POP H ;Extra PUSH left by the editor
POP H ;Restore editor stack
SHLD STKTOP
CALL BK2SK ;Copy BASIC F-key table to SYS table
XRA A ;Turn off special F-key handling
STA FKCTRL ;Special F-key byte
DCR A ;Enable label keys with FFH
STA LBENBL ;Label line enable byte
JMP POPALL ;And exit
END

Listing 4. Assembly language program TXTCAL.ASM. The program that returns you to BASIC from TEXT, instead of to the main menu.

Editor's note: You don't need an assembler to use the techniques described—Listing 5's DATA statements contain the assembled code.

But if you care to experiment with the assembly language routines, note that some assemblers disallow long label names. Either shorten the SAVESTACK, NEWSTACK, and SETEXIT labels, or omit them entirely, since they are strictly informational and not referenced elsewhere in the listing.

HSI and Custom Software assemblers require further modifications (see DEFUSR, p. 27).

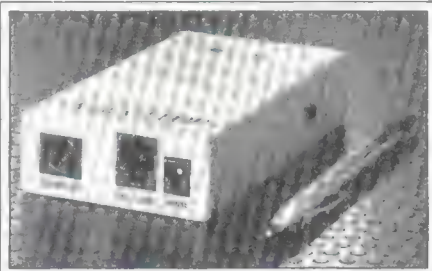
-MN

```
100 REM *** SAMPLE CALLING SEQUENCE
110 REM *** FOR ACCESSING TXTCAL ROUTINE
120 REM *** OPEN APPEND IS USED TO ENSUR
E THAT
130 REM *** FILE EXISTS BEFORE TEXT IS C
ALLED
140 FN$="HELLO.DO"
150 OPEN FN$ FOR APPEND AS 1
160 CLOSE 1
170 CALL 62750,,VARPTR(FN$)
180 PRINT "BACK IN BASIC HERE"
```

Listing 5. A BASIC program that loads the routine shown in Listing 4 and calls it to edit a file.

Three New Products from Avatex

A pocket modem, a personal copier/FAX, and new communications software have been released by Avatex. The Avatex 1200P, a portable modem with a two-year warranty, is fully Hayes compatible and comes with its own battery charger. It offers speeds of up to 1200 bps, auto-originate and answer modes, pulse or tone dialing selection, and a 40-character dialing buffer. It plugs directly into the RS-232C port. The Avatex 1200P includes an RJ11 (modular jack) interface, LED indicators for modem ready and carrier detect, and diagnostics. An optional acoustic coupler is available for non-modular telephones.

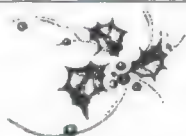


The Avatex 1200P pocket modem is one of three new products available from Avatex.

AvaTalk is the new communications software that will be included with each Avatex modem. This easy-to-use, menu-driven package for IBM compatibles offers transmission at up to 9600 baud, which allows selection of COM1 through COM4 serial ports. Eighteen autodial numbers may be stored in the directory, and users may specify options of speed, parity, etc. from the main menu. AvaTalk is supplied on a 5.25-inch floppy disk and requires 192K RAM and MS-DOS 2.1 or higher.

The EFAX-88 sends and receives high quality facsimiles, or produces personal copies. Weighing under ten pounds, it can be configured for both 110 and 220 volts, and can be adjusted for transmitting or receiving. The EFAX-88 may be operated in either automatic or manual mode, at speeds of 2400, 4800, 7200 and 9600 bps.

The 1200P pocket modem is priced in single quantities at \$149.00. AvaTalk is included at no charge with each Avatex modem, but is also available separately for \$25.00. The EFAX-88 is priced at \$1,149.00 in single quantities. For further information, contact Avatex, 1230 Oakmead Parkway, Suite 310, Sunnyvale, CA 94086 (408)732-1181. Or circle #68 on your Reader Service Card.



Disc-Clip Stores Disks in a Regular Binder

The ELBA Disc-Clip may be used to store 3.5-inch diskettes safely and securely in 2- or 3-ring binders. Made of tough polystyrene material for secure grip, the ELBA Disc-Clips can snap together in a row for convenient filing on standard loose-leaf binder rings. The diskettes slip in and out of the clips with ease, yet stay safely in place, filed securely with software documentation in manuals or with printouts in the binder.

Available in retail sets of three, large quantities of the ELBA Disc-Clip can be custom imprinted for sales or promotional purposes. Company logo, re-order information, telephone numbers, and addresses are all options for imprinting.

For further information, contact ICOP, Inc., 318 East Howard Avenue, Decatur, GA 30030 (404)373-3683. Or circle #63 on your Reader Service card.



The Disc-Clip allows 3.5-inch disks to be stored in an ordinary three-ring binder.

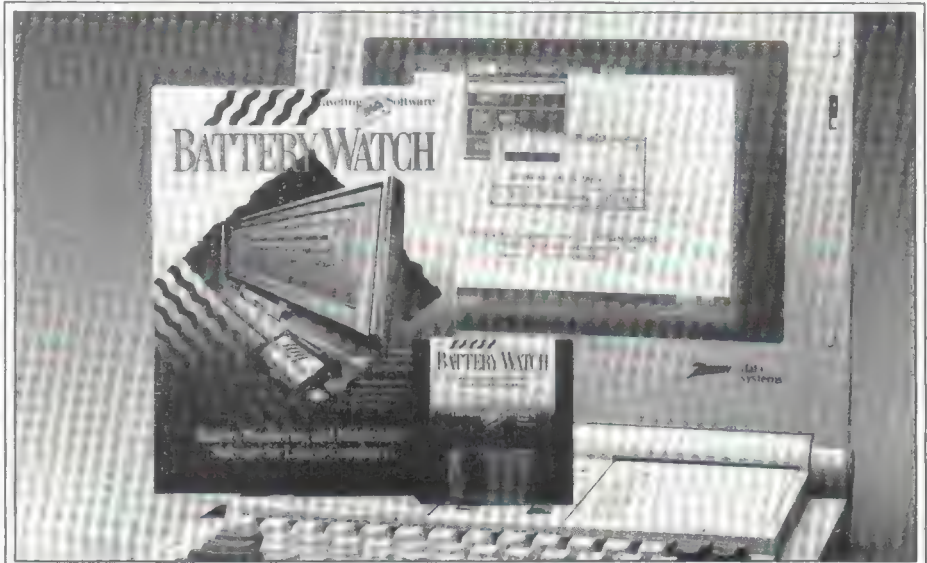
Battery Monitor Program from Traveling Software

Traveling Software, Inc. has released *Battery Watch*, a software program that provides battery monitoring and maintenance for laptop computers. *Battery Watch* indicates precisely how much battery life remains in a portable computer and also provides a "deep discharge" function that allows nickel-cadmium (NiCd) batteries to maintain their maximum charge capacities.

Battery Watch uses an indicator that looks like an automobile gas gauge to tell users exactly how much power is left in their batteries. In addition, the product estimates the time remaining on the battery, based on actual power consumption. This estimate, given in hours and minutes, is updated

every two seconds. Depending on the model of laptop computer, *Battery Watch* requires 14K to 18K memory, and operates continuously in the background.

Battery Watch has been specifically developed for the following models: Datavue Spark; Epson Equity LT; IBM Convertible; NEC Multispeed; Sharp 4501, 4502, 4521; Tandy 1400; Toshiba T1000, T1100, T1200; Zenith 181, 183. Retail price is \$39.95. For further information, contact Traveling Software, Inc., North Creek Corporate Center, 18702 North Creek Parkway, Bothell, WA 98011 (206)483-8088 or (800) 343-8080. Or circle #72 on your Reader Service Card.



Battery Watch monitors your NiCd's continuously.

DEFUSR appears monthly to answer your questions about Tandy notebook computers.

Send your queries to: DEFUSR, PORTABLE 100,
P.O. Box 428, Peterborough, NH 03458-0428.
Please enclose a stamped, self-addressed envelope for our reply.

DIM VIEW/BRIGHT FUTURE

I find the LCD screen on my Tandy 200 to be very tiring on my eyes. I would like to find a backlit monitor that is small enough to pack in an attache case. Do you know of such a thing?

T.J. Chapman
Austin, TX

Yes, indeed. It even fits inside your Tandy 200. Axonix Corporation's ThinE/L system adds electroluminescent backlighting to your existing LCD screen. Installation is done at their factory, and you have your computer back in one week. ThinE/L is available for most notebook computers, including the Tandy 600. Prices range from about \$200 to \$350, depending on computer model. You can reach them at 2257 S. 1100 E., Salt Lake City, UT 84106. Telephone (801)466-9797. We plan to review ThinE/L in the future.

-MN

¿SE HABLA ESPAÑOL?

Does a program exist for the Model 100 that would translate English words to Spanish words and vice versa? There are large numbers of Spanish and English in this country that have difficulty in translating. If this could be done on a portable, it would be most handy to many individuals and businesses.

Jim Lambert
Dallas, TX

Anybody know of something? Anybody want to write something?

-MN

TYPEZ-VOUS FRANÇAIS?

I am a fairly new user of the Model 100. I find it really interesting to use a portable computer, but since I use my computer word processor in French almost all the time, I was wondering if there is a program that I can buy or that you have mentioned in a past issue of your magazine that can transform the Model

100 keyboard into a French-Canadian keyboard with the *é*, the *à*, etc., instead of using the CODE key, which slows down my work by almost 50 percent. Thank you for your cooperation.

Pierre Labelle
St. Bruno, Quebec

The Covington Group used to advertise a program called KEYER, which let you re-map the keyboard. It had some limitations but was small and inexpensive (\$19.95). It could be your solution. I've checked, and they're still in business. You can reach them at 4519 Perry Ave. N., Minneapolis, MN 55422. Telephone (612)537-4910.

-MN

**I have a Tandy 200,
so I cannot use the
assembler for the
M100/102 from Tandy.**

MISASSEMBLER?

Is it possible to obtain a copy of your assembler? The one I have is from Hardware Software Integrations (formerly from Custom Software) and it does not seem to like the source listings you have been including in your magazine or on your diskettes. I have a Tandy 200, so I cannot use the assembler for the Model 100/102 from Tandy

(Radio Shack). Again, thank you for time and patience with me.

Bob Richey
Santa Clara, CA

It's not our assembler, Bob. Listings come from the authors' own assemblers. I believe Paul Globman and Mo Budlong use Polar Engineering's ROM2 (distributed by Traveling Software), which uses a different format from yours. By making a few changes to the listings, your HSI assembler will handle them just fine.

Change hex numbers (ending with H) to HSI's leading \$ format (e.g., from F2A3H to \$F2A3). Remove colons from label names, and shorten long ones to HSI's six-character limit. For example, LONGLABEL: becomes LONGLA, or something similar. Be sure to change all occurrences of a given label to the same thing!

Some assemblers allow spaces as field separators; change them to TAB's. Some ignore blank lines; for HSI, start a blank line with a semicolon.

Where multiple values are defined with one opcode, break them into separate lines. For example:

```
DB 21H,'g',0
DW FFFFH,103,0
```

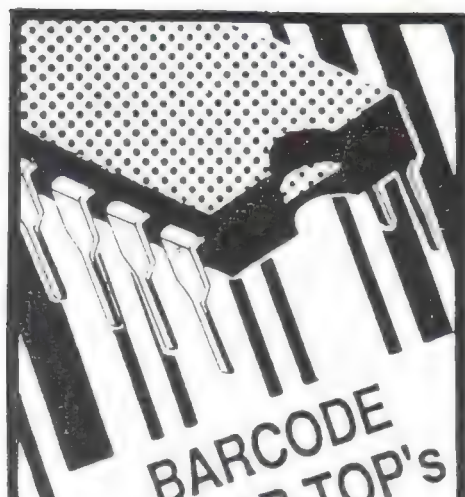
becomes:

```
DB 21H
DB 'g'
DB 0
DW FFFFH
DW 103
DW 0
```

Some assemblers use DB to define message strings, like this:

```
DB 'Message',0 ;Comment
```

HSI uses DM for this. Quotes around the



**BARCODE
For LAP-TOP's**

BARCODE SYSTEM ROM FOR MODEL 100
SCANS, PRINTS, UTILITIES, CALCULATOR,
PROGRAMMABLE APPLICATIONS BUILT-IN

BARCODE SYSTEM CARD FOR PC's, AT's,
LASERS

BARCODE SCANNERS

BARCODE DECODERS

SLOT-READERS

PC EXPANSION CARDS

**OPTICAL DATA
SYSTEMS INC.**

CALL:
(619)
745-6563

Circle 15 on reader service card.

string are not allowed, nor are comments. Put the comment on a separate line. Define the 0 byte on its own line. Like this:

```
,Comment
DM      Message
DB      0
```

Change all occurrences of PSW to AF. PSW (Program Status Word) is the 8085 mnemonic for the combination of the A (Accumulator) register and F (Flags) register. When the Z-80 processor was introduced, the mnemonic was changed to AF. For some strange reason, the HSI assembler uses the Z-80's AF mnemonic.

Replace an ENTRY pseudo-op with HSI's ENT. Some assemblers assume that if ENTRY isn't specified, the execution address is the first address of the assembled code. In such a case, just put the ENT at the start of the source code.

And finally, put the END pseudo-op at the end of your listing. The HSI assembler requires it.

As always, use HSI's LINE, SCR, and PRT pseudo-ops throughout your source code to control line numbering, screen display, and printing during assembly.

-MN

STAT REPLY:

In the September issue of *Portable 100*, Michael Newell asked about checking the status of the RS-232 port on the Model 200. I don't know the address for the 200, but on the 100 it's 63067. The following routine will return the status in the same format as TELCOM's Stat function:

```
10 AD=63067
20 FOR I=0 TO 4
30 PRINT CHR$(PEEK(AD+I));
40 NEXT
```

It can also be written on one line to save space and execution time:

```
10 FOR I=0 TO 4: PRINT CHR$
(PEEK (63067 + I)); NEXT
```

In the Model 100 technical manual, this address is listed with the INZCOM ROM routine for initializing the RS-232 port and modem. It refers to a 5 byte text string located at F65B(Hex). This converts to the 63067(Dec) addresses used above.

If Mr. Newell can find the address from the technical manual or another Model 200 user, I believe this routine will accomplish what he needs.

**Eric Chromick
Waynesville, OH**

The TELCOM stat string in the Tandy 200 starts at address 61244. Use that value in place of 63067 above. For other TELCOM ROM routine addresses, refer to the Tandy 200 Technical Reference Manual; *Portable 100* back issues, for example, Carl Oppedahl's "Tandy Portables: What's the Difference?" (June '85); and of course, the major on-line services. To handle handshaking signals and other operations, BASIC's INP() and OUT statements will access I/O ports directly. These should be shown in the tech ref manual. Thanks for the help, Eric!

-MN

TOUGH BEING GREEN

I am writing to ask if you or any of your readers know of a version of KERMITE for the Model 100/102? I have been unable to find one through KERMITE (Columbia U.) channels or through Tandy in Fort Worth, Texas.

Thank you for your help.

**Mark Miller
Schenectady, NY**

I seem to recall seeing that file transfer protocol on CompuServe. You might try GENIE and the Source as well. Can anyone else help us?

-MN

Y NOT?

In answer to Jim McGill's question (Oct. '88, "DEFUSR"), GRPH-Y sends a

INPUT - OUTPUT

Need to get analog voltage or digital switch information into your M102?

Want to send analog or digital data from your M102?

Low cost hardware which plugs into system bus.

Call or write:

Rural Engineering Inc.

Route 14, Box 113F
So. Royalton, VT 05068
Tel. (802) 763-8367

Circle 88 on reader service card.

true break on the Model 100—at least, it works for me.

**Frederick Crane
Iowa City, IA**

Thanks, Frederick! I'm afraid neither GRPH-Y nor GRPH-y would work for me. But if it works for you, perhaps it will work for others. And it's so easy, there's no reason not to try it.

-MN

"HIGH" POWERED 100

As an airline pilot I occasionally use my Model 100 in the cockpits of the Boeing aircraft I fly, plugging the AC adapter into a 115-volt receptacle conveniently located on the aft circuit breaker panel. I now discover that the frequency of this outlet is 400 cps (as produced by the aircraft generators).

Is there any harm that may result from long-term use of such electrical power?

**Mark E. Ingram
Purdy, MO**

Radio Shack technicians tell me it's no problem. The transformer might run a bit warmer; that's all. However, let me suggest that if you experience frequent power dives, then by all means, feel free to discontinue the practice (tee-hee!).

-MN



PUZZLE.BA

E

ditor's note: When he heard that space restrictions could delay publication of Michael Heim's article, Paul Globman called me. "Why not run a mini-Custom 200 this month to make room?" he asked. "I've got just the thing!"

And indeed he does! His little "Christmas present" will definitely challenge you. A real head-scratcher. Press a number to select a block.

9	8	6
0	7	5
		4
1	2	3

Figure 1. (Before) Move block 0 from the left side...

```

Ø REM PUZZLE by Paul Globman
1 REM      copyright (c) 1988
2 CLS:DIMLC(2Ø):C=1:FORI=ØTO9:READSQ(I),
  TY(I):NEXT:FORI=1TO4
3 READXX(I),YY(I):NEXT:FORI=ØTO9:GOSUB48
  :NEXT:I=4
4 RV$=CHR$(27)+"p":GOSUB48:GOSUB26
5 A$=INKEY$:IFA$=" "THEN5
6 IFA$=>"Ø"ANDAS$<="9"THENRV$=" ":GOSUB5Ø:
  I=VAL(A$):GOTO4
7 IFA$=CHR$(28)THEN15
8 IFA$=CHR$(29)THEN12
9 IFA$=CHR$(3Ø)THEN19
1Ø IFA$=CHR$(31)THEN22
11 IFA$=CHR$(27)THENMENUELSEBEEP:GOTO5
12 IFSQ(I)MOD5=ØTHEN11
13 SF=Ø:GOSUB31:IFSF=ØTHEN11
14 GOSUB47:SQ(I)=SQ(I)-1:GOTO4
15 IFSQ(I)MOD5=4THEN11
16 IFTY(I)MOD2=ØAND(SQ(I)+1)MOD5=4THEN11
17 SF=Ø:GOSUB39:IFSF=ØTHEN11
18 GOSUB47:SQ(I)=SQ(I)+1:GOTO4
19 IFSQ(I)<5THEN11
2Ø SF=Ø:GOSUB35:IFSF=ØTHEN11
21 GOSUB47:SQ(I)=SQ(I)-5:GOTO4
22 IFSQ(I)>14THEN11
23 IFTY(I)>2THENIF(SQ(I)+5)>14THEN11
24 SF=Ø:GOSUB43:IFSF=ØTHEN11
25 GOSUB47:SQ(I)=SQ(I)+5:GOTO4
26 FORJ=ØTO19:LC(J)=Ø:NEXT:FORJ=ØTO9:LC(
  SQ(J))=1
27 IFTY(J)MOD2=ØTHENLC(SQ(J)+1)=1

```

Move it with arrow keys. If it's three in the morning, the dog is trying to dig his way into the house, and you've made your last pot of coffee, press ESC to return to the menu. (This program and a M100/102 version are also on CompuServe's Model 100 Forum.) So have fun, and good luck! Then later—when we're darn good and ready—we just might publish his solution. -MN

		Ø

Figure 2. (After) ...to the right side.

```

28 IFTY(J)>2THENLC(SQ(J)+5)=1
29 IFTY(J)=4THENLC(SQ(J)+6)=1
3Ø NEXT:RETURN
31 IFLC(SQ(I)-1)=1THENRETURN
32 IFTY(I)<=2THENSF=1:RETURN
33 IFLC(SQ(I)+4)=ØTHENSF=1
34 RETURN
35 IFLC(SQ(I)-5)=1THENRETURN
36 IFTY(I)MOD2=1THENSF=1:RETURN
37 IFLC(SQ(I)-4)=ØTHENSF=1
38 RETURN
39 IFLC(SQ(I)+1+(TY(I)+1)MOD2)=1THENRETU
  RN
4Ø IFTY(I)<3THENSF=1:RETURN
41 IFLC(SQ(I)+TY(I)+3)=ØTHENSF=1
42 RETURN
43 IFLC(SQ(I)+((TY(I)<3)+2)*5)=1THENRETU
  RN
44 IFTY(I)MOD2=1THENSF=1:RETURN
45 IFLC(SQ(I)+1+((TY(I)<3)+2)*5)=ØTHENSF
  =1
46 RETURN
47 C=Ø
48 X=SQ(I)MOD5:Y=INT(SQ(I)/5)
49 LINE(X*48,Y*32)-((X*48+XX(TY(I))),Y*3
  2+YY(TY(I))),C,B
5Ø PRINT@41+Y*16Ø+X*8,RV$CHR$(I+48)CHR$(
  27)"q";:IFC=ØTHENPRINTCHR$(8)+" "
51 C=1:RETURN:DATA 5,4,15,2,17,2,19,1,14
  ,1,9,1,4,1,7,3,2,2,Ø,2
52 DATA 46,3Ø,94,3Ø,46,62,94,62

```

End of listing.

BACK ISSUES!

Ever since we bought Portable 100, the most frequently asked question has been, "Do you have any back issues?" Up until now the answer has been, "No." Nevertheless, all this time we have been tracking down a rumor that somewhere in Camden, Maine, was a barn loaded with old issues of Portable 100. Well, we finally ran it to ground and found the barn, the issues, and the barn's owner. To make a long story short, we now have Portable 100 back issues. The bad news is that we have only a limited number of issues, merely 100 per month published, thirty-one months in total, plus those of our own (see chart below).

Because of this these pre-1987 collector issues are available for \$19.95 each, postage and handling included. The issues from August 1987 to present are \$5.00, postage and handling included.

To help you decide which issues you want, we've put together a special, comprehensive 18-page article index covering every issue published from September, 1983 (premier issue) to the July/ August 1988 issue. This index is available for only \$5.95, plus \$1.05 shipping and handling. The \$5.95 will be credited to your first back issue order.

Month	83	84	85	86	87	88
January			NOT PUBLISHED			
February						
March			OUT		NOT PUBLISHED	
April		OUT				
May		OUT				
June		OUT				
July		OUT		OUT		
August						NOT PUBLISHED
September	Premier Issue					
October		OUT		NOT PUBLISHED		
November						
December						

***Is the issue
you want
sold out?
If so, photocopies
of the articles
are available.
Get the Article
Index for details.***

- ☐ Send me the Portable 100 Article Index for \$7.00 (\$5.95 + \$1.05). I understand the \$5.95 cost will be credited to my first back issue order.
- ☐ Please send me the back issues I've indicated above (pre-1987—\$19.95 each; 8/87-on—\$5.00each; shipping and handling charges included).

PAYMENT MUST ACCOMPANY ORDER

☐ CHECK ENCLOSED ☐ MC ☐ VISA

Total enclosed: _____ CARD# _____ EXP. DATE _____
Be sure to include entire card number

NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

The Portable 100 Classifieds

SERVICES

MODEL 100, 102 200 SUPPORT

International support by mail, voice, and bulletin board (M8N1E). Free on-line weekly newsletter. For your free 5.25" diskette of information and programs, write to: CLUB 100, A Model 100 User Group, 984 Hawthorne Drive, Walnut Creek, CA 94596

Model 600. Programs/Newsletter. Send S.A.S.E. for information. Easy Ware Products; P.O. Box 218778; Houston, TX 77218-8778

SOFTWARE

By Teachers for Teachers: "Grade Management System" Personal-

ized... Stay organized. You set up to: 12 grade values-9classes-50 students. 3.5-inch disk for PDD. Tandy 100/102, 200. We also customize 5 BASIC programs. \$49.00+\$2.00 (S&H). Software by Steffens', 1731 William Ct., Little Chute, WI 54140.

TRANSFER.COM (Club 100 Special Edition) MS-DOS/Tandy Laptop \$9.95 plus \$1.00 shipping and handling (Min. \$20 for MC or VISA orders; Calif. residents add 6.5% tax).

Easily transfers programs between MS-DOS computers and your Model 100, 102, or 200 laptop with the "special edition" CLUB 100 TRANSFER program. Experience new power and freedom. MS-DOS formatted 5.25-inch disk contains the transfer program, complete documentation and several unique files,

including laptop programs not found anywhere. Write to: CLUB 100: A Model 100 User Group, 984 Hawthorne Drive, Walnut Creek, CA 94596.

Run "TRANS-IT" and your PC and turn control over to your laptop—for fast and easy file transfers. Model 100/102/200/600, NEC laptops and many more. All transfers are done from the laptop's keyboard. Requires standard null modem cable, also available. TRANS-IT, \$39.95 (specify 5.25-inch or 3.5-inch disk. Null modem cable—\$12.50. Selective Software Company, P.O. Box 91723, East Point, Georgia 30344. Orders shipped by return mail.

HARDWARE

For Sale-Best offer: Two M-100's 128K, also Tandy Drive 1, programs, accessories, and complete M-100 magazine collection. Call 305-432-7588

Wanted-Tandy 100K PDD One, Catalog #26-3808. H. Hendrix; 906 So. Viola; Milbank, SD 57252; 605-432-6548

Model 100 (32K) with backlit screen and SuperROM, Chipmunk disk drive with software. Total system price \$650. Call 312-351-3737. Ask for Steve or Bob.

The "POWER PILLOW"™ by Club 100. \$19.95 assembled/\$14.95 kit plus \$2.00 shipping and handling (Min \$20 for MC/VISA; Calif. residents add 6.5% tax).

Never commercially advertised outside of CLUB 100 until now. The secret to long-lasting power is now available to non-club members. Get the convenience and power of 4 "D" cell batteries and a leather-like look. Easily powers all 6v-DC laptops and peripherals. Customizing tips included. Write to: CLUB 100: A Model 100 User Group, 984 Hawthorne Drive, Walnut Creek, CA 94596.

HOW TO PLACE A CLASSIFIED AD

Categorize your advertisement (Hardware, Software, Services, Wanted, Etc.) and carefully type your message. We are not responsible for correctly interpreting handwritten advertisements. Phone numbers, street numbers, dimensions, and any abbreviations count as one word. Logos, company or product, are not allowed, neither are display advertisements. Business rates are \$1.60 per word; non-business rates (individuals advertising) are \$1.30 per word. Add up the cost and send the advertisement copy with a check, money order, Visa, or Mastercard number to: Portable 100 Classifieds, 145 Grove St. Ext., P.O. Box 428, Peterborough, NH 03458-0428, c/o Linda Tieman. Make checks payable to Portable 100 Classifieds. Include your complete return address and phone number (phone number is printed only if it is included in the advertisement itself). Materials due the 1st of the month, two months prior to the magazine cover date (example: materials for the February issue must be received by December 1st.) Advertisements received after the deadline will appear in the next scheduled issue. Payment must accompany order. No refunds for advertisements that miss deadlines, regardless of reason. We reserve the right to change advertisement categories, and to reject, edit, or cancel any advertisement we deem improper. There are no agency discounts for classifieds. **For faster service call 603-924-7949.**

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Ad Category _____ No. of words x (1.60)(1.30) _____ #Issues to run _____

Name _____

Address _____

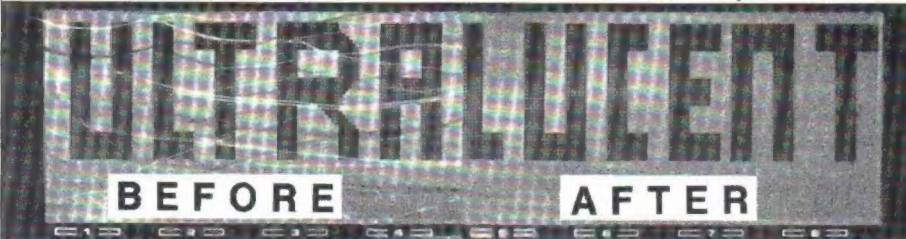
City _____ State _____ Zip _____

Total Enclosed x (Ad Cost x Issues) _____ Phone Number _____

Visa/Mastercard Number _____ Exp. Date _____

Signature _____

Is the screen on your Laptop **SCRATCHED**? Then restore it yourself with...



ULTRALUCENT is a scientifically engineered set of cushioned abrasives that will restore the hard plastic display of any laptop or notebook computer back to "just-out-of-the-box" BRAND-NEW condition. ULTRALUCENT will remove haziness, hairline scratches, minor scratches and deep scratches. "Screen restoration takes just minutes, but the benefits can be seen immediately and are long lasting. And it is so easy to use too!" ... Larry Turner, Photographer, Montreal

ULTRALUCENT is unconditionally & fully guaranteed for 100% satisfaction or your money back! Here's what you get:

- 6 cloth-backed, color coded, re-usable cushioned abrasive pads
- Application foam block
- Anti-Static Finishing Cream for removal of abraded particles
- Wiping towel and complete instructions

All this for only \$19.95 + \$3.00 Shipping & Handling. To order (VISA, MC, CHECK or COD), phone or write:
ULTRASOFT INNOVATIONS INC. 76 Main Street, P.O. Box 247, Champlain, NY 12919 Tel. (514) 487-9293 (9-5 EST)
DEALER INQUIRIES WELCOME! Laptops with soft plastic displays can use our ULTRALUCENT EL (\$14.95 + S. & H.)

Circle 37 on reader service card.

FOUR MODEL 100 BOOKS

The Model 100 Program Book

by Terry Kepner and David Huntress

This book contains 51 useful and interesting BASIC programs designed for home, office, and educational uses. Program examples include: Bar Graph, Depreciation, Annuity, Pie Chart, Forms creation, Invaders game, Memory scan, Touch typing tutor and many others.
Only \$12.95 plus \$2.00 shipping.

Inside the Model 100

by Carl Oppedahl

"...an excellent Guide" —New York Times

Inside the TRS-80 Model 100 is a thorough guide to the internal workings of the Tandy Model 100. This book is a valuable source of information for those who wish to learn assembly language programming on the Model 100. Other areas include: Disassembled ROM routines; Keyboard scanning; UART, RS-232C, and modem; Clock/calendar chip; Interrupt handling; 8085 instruction set.
Only \$19.95 plus \$2.00 shipping.

60 Business Applications Programs for the TRS-80 Model 100 Computer

by Terry Kepner and Mark Robinson

Here are 60 powerful programs for interest calculations, annuities, depreciation, invoices, breakeven sales analysis, and more. Ask for a signed copy!
Only \$17.95 plus \$2.00 shipping.

User Guide and Applications for the TRS-80 Model 100 Portable Computer

by Steven Schwartz

Gain expertise on the Tandy Model 100 with 14 ready-to-run programs for business. This package includes programs for statistics, graphics, sound, and more. With cassette tape.
Only \$42.95 plus \$2.00 shipping. Or buy them separately—the book is only \$17.95; the cassette tape is only \$25.00, plus \$2.00 shipping.

Mail orders with payment to:

**Portable Computing
International Corporation**
P.O. Box 428
Peterborough, NH 03458-0428
or call (603) 924-9455

Free Information

For free information on products advertised in this issue of Portable 100, locate the Reader Service number corresponding to the advertisement that interests you. Circle the number on the Reader Service Card at page 25 (or on the wrapper protecting the magazine if you are a subscriber) and drop it into the mail. The literature you've requested will be forwarded to you without any obligation. Please allow 3-5 weeks for delivery.

ADVERTISERS

RS#		Page
111	King Computer Services	23
15	Optical Data Systems	28
66	PCSG	CIII
70	Radio Shack	CII
88	Rural Engineering	28
60	Simon's Products	14
20	Shreve Systems	5
17	SoundSight MBM	CIV
	Traveling Software	I1
34	Traveling Software	I2
36	Traveling Software	I3
	Traveling Software	I4
37	Ultrasoft Innovations	32

** Please contact this advertiser directly

NEW PRODUCTS

RS#	Manufacturer	Page
68	Avatex	26
63	ICOP, Inc.	26
72	Traveling Software	26

**Don't forget
to say
you saw it in
Portable 100!**

SUPER ROM

Lucid Spreadsheet

Write ROM

Database

Outliner



NOW YOU CAN REALLY HAVE IT ALL!

All on one ROM. Truly the finest four programs available for the Model 100 — guaranteed. Try it for 30 days. If you aren't blown away by the excellence return it for a full refund.

\$199⁹⁵

The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

Write ROM — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit... sur-

passed our highest expectations for quality and clarity."

Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

Database: This is a relational data base like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as

you like. Complete math between fields. Total interface with Lucid worksheets.

Outliner: Does everything that Think-tank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

Present Lucid and Write ROM owners can upgrade for \$150. If you have both it's \$125.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at \$199.95 on Snap-In ROM.

Got stuck with somebody else's multi-ROM? We'll upgrade it for \$150.

(214) 404-4000

PORTABLE COMPUTER SUPPORT GROUP

4540 Beltway Drive, Dallas, TX 75244 • 1(214) 404-4000 • 1-800-544-4699

©PCSG

MC, Visa, American Express, Check, or C.O.D.

Circle 66 on reader service card.

Announcing:

The SOUNDSIGHT GOLD CARD

Megabytes of memory on a credit-card-sized wafer

A mere 1/8" thick

Give your **Tandy 100/102** the power it deserves without sacrificing portability or adding bulky boxes. The SoundSight Gold Card lets you add as many megabytes of **RAM and ROM** as you wish with advantages other expansions just can't match.

- Allows **Unlimited RAM and ROM** expansion in increments from 128k to 1mb per card with 2 mb cards available in '88. Additional slots piggyback allowing 10 mb or more!

- **Dual Card Slots** with dual directories allow easy transfer of megabytes of data from card to card or computer to computer in seconds.



- Replaceable, Card-Contained Lithium Battery.

- **Menu Driven ROM** resident operating system with Basic I/O functions, read/write error detection, and nondestructive RAM test. Accesses Text, Basic and Co files directly and operates in Random Access Mode. Each byte is directly accessible from Basic.

- SoundSight Gold Cards are also available in permanent **One-Time-Programmable** or **Read-Only-Reprogrammable** memory cards for large nonvolatile software application use in conjunction with RAM cards.

Optional new **ROM ELIMINATOR** lets you load and run multiple ROMs directly from the SoundSight Gold Card, dispensing with the need for extra ROM sockets or even having your ROM chips with the computer!

NEW OPTIONAL SOFTWARE DEVELOPMENTS:

- ROM resident Forms Generator with full Telecommunications and Desk Top package, for Law Enforcement Incident Reports, or any custom data entry applications.
- Point of Sale Inventory Control Software.
- New C Compiler compiles programs to machine code, condensing them to a fraction of their original size and speed. Runs them directly from cards.
- New GOLDTEXT Editor opens and edits files as large as available card RAM.
- New Compiler compiles basic programs to machine code, condensing them to a fraction of their original size and speed. Runs them directly from cards.



SoundSight offers **customized hardware/software** systems for law enforcement, retail, warehousing/distribution and other vertical markets, as well as third party dev. (C language). **We're ready to meet your needs TODAY!**

Pricing available from 128k to 10mb with 128k at \$399.95; 256k at \$549.95; and 512k at \$749.95; Additional cards for backup are available.

CONTACT:

SoundSight MBM Inc., 225 West Broadway, Suite #509, Glendale, CA 91204
Phone (213) 463-9457 or (818) 240-8400

Circle 17 on reader service card.